



**Carnegie Mellon  
Software Engineering Institute**

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# **Interpreting SCAMPI<sup>SM</sup> for a People CMM<sup>®</sup> Appraisal at Tata Consultancy Services**

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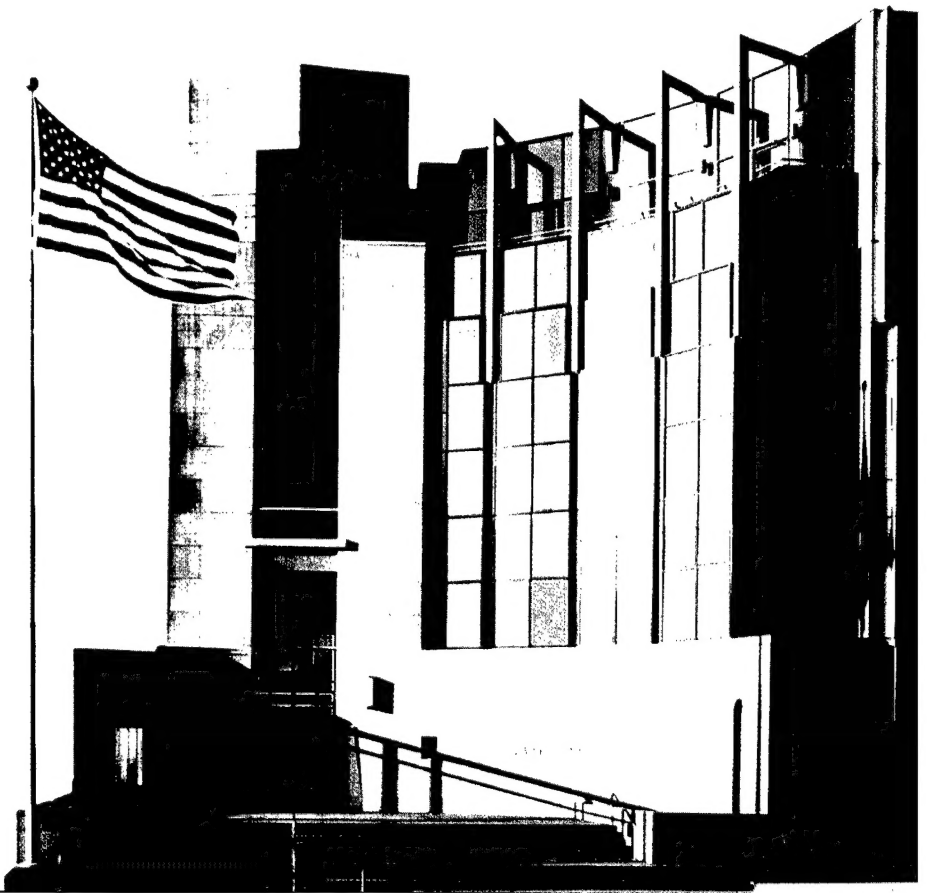
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*February 2005*

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CMU/SEI-2005-SR-001





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Software Engineering Institute**

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Pittsburgh, PA 15213-3890

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**Software Engineering Process Management  
(SEPM) Program**

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## Abstract

Tata Consultancy Services (TCS) is a large information technology consulting, services, and business process outsourcing organization interested in reducing the costs of conducting process improvement appraisals at its multiple locations. TCS initiated a pilot to determine whether appraisals could be performed at the enterprise level instead of at each location or center while preserving the integrity of the Standard CMMI<sup>®</sup> Appraisal Method for Process Improvement V1.1 (SCAMPI<sup>SM</sup> V1.1). The pilot was also used to determine whether a single type of appraisal could be effective in an organization compliant with multiple models.

A pilot Class A SCAMPI appraisal for the People Capability Maturity Model<sup>®</sup> (People CMM<sup>®</sup>) was performed jointly with a Class A SCAMPI appraisal for Capability Maturity Model Integration (CMMI) across TCS in 2004. This report includes the draft interpretation guide used for four mini-appraisal pilots and the final enterprise-wide Class A appraisal at TCS. The information in this report could serve as an example for other organizations and is fully applicable to any size SCAMPI appraisal with People CMM.



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# 1 Introduction

Tata Consultancy Services Limited (TCS) is an information technology consulting, services, and business process outsourcing organization based in Asia but with locations in 32 countries across 5 continents. TCS, like many large organizations with multiple software centers, was interested in reducing the costs of doing process improvement appraisals at its multiple locations (18 separate assessments for the Software CMM® were required in India alone) and across multiple models.

TCS has also had its own Quality Management System (QMS) in practice since 1989. This system, called iQMS, was written to be model independent and compliant with ISO 9000, the Software CMM (SW-CMM), Capability Maturity Model® Integration (CMMI®), People CMM, and the Malcolm Baldrige National Quality Award (MBNQA). TCS developed this system to maintain a high quality focus without being pulled by changing quality models. Rather, as new models are developed and existing models evolve, iQMS can evolve in concept and not be limited by model specifics and terminology.

## 1.1 Defining a Pilot

The organization approached Ron Radice to discuss whether

- appraisals could be performed at the enterprise level instead of at each location or center while still preserving the integrity of the Standard CMMI Appraisal Method for Process Improvement (SCAMPI<sup>SM</sup>) appraisal method
- a single type of appraisal could be effective in an organization that was compliant with multiple models but strategically looking to become independent of external quality models

Radice believed it was possible and began working with TCS on a pilot to explore the use of one common appraisal method across multiple quality models, including the SW-CMM, CMMI, and the People CMM. Their approach, which they called an enterprise appraisal, also needed to be fully consistent with a Class A SCAMPI appraisal.

## 1.2 Using SCAMPI with the People CMM

When the pilot began, TCS was considering the move from SW-CMM to CMMI, but was concerned about the cost of migrating at 18 locations. TCS had completed four People CMM V2.0 appraisals and was thinking of moving all its locations to People CMM V2.0. A natural

starting point for the project was investigating the use of one appraisal method with both CMMI and People CMM.

Because the CMMI Product Team had invested a considerable amount of time and energy in CMMI and the related SCAMPI appraisal method, it seemed natural to try to determine whether SCAMPI could be applied to other quality models. Radice, who had previously performed SCAMPI with SW-CMM, knew SCAMPI was rich enough to be used with more than one model [Radice 03]. The CMMI Steering Group also has sanctioned SCAMPI's application with SW-CMM, confirming its usefulness with models other than CMMI. Radice decided to perform a pilot Class A appraisal to meet TCS's objectives and to provide evidence that SCAMPI could work for a People CMM appraisal.

Because the SW-CMM was one of the main sources for CMMI, the models have much in common. People CMM, on the other hand, is very different from CMMI. Even though the architecture is the same across these models (e.g., they both use maturity levels, process areas, goals, and related practices), the focus is different. CMMI concentrates on software and systems, while the People CMM is focused on the workforce. However, even though CMMI does not directly integrate the People CMM, there are similarities and synergies between the process areas and practices of the two models [Hefley 03].

A further challenge arose because different terms are used for common ideas in CMMI and the People CMM, and in some cases the same terminology is used for different concepts. Further, there are different views about how objective evidence should be obtained and used (e.g., SCAMPI using CMMI requires direct and indirect artifacts which are derivable from the CMMI practice descriptions and the interpretive material in the model, but these are not so clearly derived from People CMM). The People CMM appraisal method made strong use of surveys as primary evidence. While SCAMPI permits the use of surveys and other similar instruments, it is careful to raise the risk that surveys should not be used to replace affirmations through interviews.

The team chose to work within these challenges under the guiding premise that to be SCAMPI CMMI compliant, no requirements of SCAMPI could or would be dropped when using SCAMPI with People CMM. Because SCAMPI did not address all of the People CMM's needs (e.g., a review of the draft with the organization's legal department), CMMI would need to be extended to address People CMM appraisal needs. Again no extension to the People CMM baseline would compromise any SCAMPI requirement.

Because the methods are the intellectual property of Carnegie Mellon University, agreement was needed to determine if the application of SCAMPI using People CMM would be accepted in concept. Once Bill Peterson, Director of the Software Engineering Process Management Program at the SEI, gave permission to proceed with a pilot using SCAMPI with People CMM, Radice began working on interpretation guidelines for the pilot.

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## 2 Guidelines for the Appraisal

A draft interpretation guide was developed to show how the SCAMPI method could be applied with the People CMM, v 2.0 [Curtis 02] as the reference model for a process appraisal. The guide was developed using material from the *Standard CMMI Appraisal Method for Process Improvement (SCAMPI), Version 1.1: Method Definition Document* [SEI 01a] and the *People CMM-Based Assessment Method Description* [Hefley 98].

To keep the work simple, the SCAMPI Method Definition Document (MDD) was used as the basis for the SCAMPI with People CMM interpretation guide for the People CMM such that:

1. When the SCAMPI MDD was applied fully “as is” for People CMM, the wording was not changed, but kept as in SCAMPI.
2. When People CMM used different terminology, the terms were changed in the interpretation guide as indicated in Appendix L.
3. In some cases, material has been added from the People CMM-Based Assessment Method Description (People CMM BAM) [Hefley 98] to provide a clearer understanding for SCAMPI with People CMM. Comparisons with People CMM BAM are shown in Appendix D.
4. The Preparing phase in People CMM-BAM Description is the same temporal phase as the SCAMPI Plan and Prepare for Appraisal phase in the SCAMPI MDD. The People CMM-BAM Description has 7 tasks in this phase, while SCAMPI has 5 processes with 21 activities.

The sponsor’s objectives for performing SCAMPI were determined in the first process of the first phase. All other planning, preparation, execution, and reporting of results proceeded from this initial activity according to the phase and processes outlined.

The following sections in this chapter present the process definitions used to perform the pilot enterprise appraisal.

## 2.1 Phase 1

This phase has five processes: Analyze Requirements, Develop Appraisal Plan, Select and Prepare Team, Obtain and Analyze Objective Evidence, and Prepare for Collection of Objective Evidence.<sup>1</sup>

### 2.1.1 Analyze Requirements

**Purpose**—To understand the business needs of the organization for which the appraisal is being requested. The appraisal team leader should collect information and help the appraisal sponsor match appraisal objectives with their business objectives.

#### Entry Criteria

- An appraisal sponsor has decided that a SCAMPI with People CMM appraisal should be performed.
- People who can provide statements of requirements for the appraisal are available.

#### Inputs

- sponsor
- initial requirements and constraints
- process-related legacy information

The use of legacy information from prior appraisals and mini-appraisals within a reasonable time period is allowed. **This is new for SCAMPI with People CMM.** Legacy information can be an aid to formal appraisals during the discovery activities (i.e., document reviews). Thus when information from a previous document review retains evidence that is reusable during a future appraisal, it should be considered.

However, not all documents will become legacy information for reuse. The appraisal team must always ask to make sure the information is current: if a policy or procedure has not changed between two appraisals or mini-appraisals, the process-related legacy information can be reused. What typically cannot be reused is information demonstrating process performance. For example, a development plan for an individual might have changed, or a project plan might have been revised or a project closed out. In cases like these, new documentation is required.

**Activities**—The five activities listed below are required for this process.

2.1.1.1 Determine Appraisal Objectives

2.1.1.2 Determine Appraisal Constraints

2.1.1.3 Determine Appraisal Scope

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<sup>1</sup> The SCAMPI CMMI processes (such as Analyze Requirements) are not at an equivalent level of comparison with the People CMM-BAM description. Comparisons are made at the activity level in SCAMPI to maintain parity across the two methods.

#### 2.1.1.4 Determine Outputs

#### 2.1.1.5 Obtain Commitment to Appraisal Input

**Outputs**—The appraisal input.

**Outcome**—The decision to proceed with the appraisal based on a shared understanding of the appraisal objectives, constraints, outputs, and scope.

#### **Exit Criteria**

- Initial contact between the appraisal sponsor and authorized SCAMPI with People CMM Lead Appraiser has occurred.
- The Lead Appraiser has been given access to members of the sponsoring organization.
- The appraisal input has been approved by the appraisal sponsor and placed under change management.

**Key Points**—At this early stage in the process, gathering information that supports good planning is most important. Often, the appraisal team leader must educate members of the sponsor's organization about the purpose and role of appraisals.

**Tools and Techniques**—Collaborative consultation between the appraisal team leader and the appraisal sponsor is important in this activity. The appraisal team leader might need to interview the sponsor to get the needed information and reach agreements. In some settings, a series of meetings with different stakeholders might be needed to elicit and build consensus on the business needs that can be met through a SCAMPI with People CMM appraisal.

Understanding the history of appraisals in the organization—especially the organizational and model scope of past appraisals—is important in understanding the requirements for the appraisal under consideration. The choices sponsors make about appraisal scope are often tied to their priorities for process improvement, which are sometimes unstated.

A history reflecting all appraisal activities is captured in the SCAMPI appraisal plan using the SCAMPI with People CMM template, which is similar to the template used for SCAMPI. This history sets a foundation for sampling the organization to ensure sufficient representation during an appraisal. Refer to Appendix A for more information about sampling.

**Metrics**—The following metrics support the appraisal team leader's monitoring of this work:

- calendar time between initial contact and finalization of requirements
- effort expended to gather and analyze requirements
- number of meetings with representatives of the sponsoring and/or appraised organization

Metrics are captured in the appraisal plan.

**Verification and Validation**—The exit criterion for this activity is the formal approval of the appraisal input and its placement under change management. Appraisal input is captured using a template similar to the SCAMPI CMMI template and migrated to the appraisal plan.

Review of the documented agreements resulting from this set of activities validates the requirements, which feed into appraisal planning.

**Records**—The appraisal input.

**Tailoring**—The experience of the sponsor with process appraisals drives tailoring choices for this process. A relatively inexperienced appraisal sponsor needs a great deal of information and consultation to provide meaningful and complete requirements for the appraisal. Experienced sponsors might have overly aggressive requirements.

Risks determined during this process are captured in the SCAMPI with People CMM appraisal plan.

**Interfaces with Other Processes**—This process is a foundation for the success or failure of the entire appraisal. At this point in the appraisal, the greatest opportunity for avoiding problems downstream exists. Gathering and understanding the requirements for conducting a SCAMPI with People CMM appraisal is vital to making appropriate decisions and providing value to the sponsor. Many examples of problems encountered during appraisals can be traced to shortcomings in the conduct of this process. The extent to which the activities described here are distinct from the activities described in process 2.1.2 Develop Appraisal Plan will depend on the strategy and preferences of both the appraisal team leader and the appraisal sponsor.

**Summary of Activities**—The objectives that motivate the conduct of an appraisal must be well understood so appropriate participants, tailoring decisions, and appraisal outputs can be selected. The constraints that shape the appraisal enactment, in light of the objectives, might limit achievement of the desired result if they are not adequately understood and negotiated. A clear agreement regarding appraisal outputs and their intended use will help maintain the sponsorship needed for conducting the appraisal and acting on the results. Agreement on these objectives, constraints, outputs, and intended use forms the basis for a commitment to the plan for conducting the appraisal.

#### **2.1.1.1 Determine Appraisal Objectives**

**Activity Description**— When using People CMM, the business needs for process improvement drive the requirements for the conduct of the appraisal and generally include one or more of the following closely related factors:

- establishment of a baseline characterization of workforce practices to enable improvement
- organizational merge, transition, or change in ownership
- sustaining higher CMM or CMMI levels through solid People CMM workforce practices

The fundamental premise of process improvement is that organizational processes significantly impact these factors. A fair and objective characterization of the processes in use in the organization is the essential reason for conducting an appraisal. In addition to this motivation, a sponsor's desire to conduct an appraisal could be driven by one or more of the following business-related objectives:

- to document a credible benchmark that reflects successful process improvement
- to evaluate areas of potential risk that might affect the performance of the organization
- to involve members of the appraised organization in improving the performance of the process
- to support specific decisions related to the direction of a new or existing improvement program

#### **Required Practices**

- Identify sponsor and relevant stakeholders and establish communication.
- Document business and appraisal objectives.
- Ensure the alignment of appraisal objectives to business objectives.
- Determine and document the appraisal usage mode as "internal process improvement."
- Make organization aware of the forthcoming appraisal. Achieving early buy-in from members in the organization is easier if they are aware of the forthcoming appraisal.

The results of these practices are captured in the appraisal plan.

**Parameters and Limits**—At least one communication between the appraisal team leader and sponsor is required.

**Optional Practices**—None.

**Implementation Guidance**—Organizations with experience in the use of appraisals might have a clear set of appraisal objectives identified before contacting a Lead Appraiser. While this provides the Lead Appraiser with a starting point, it does not permit him or her to skip this activity.

Also note that the appraisal sponsor and senior site manager might be the same person. Depending on the structure of the appraised organization and the usage mode, it is often important to distinguish the role of senior site manager from that of appraisal sponsor. For some appraisals, these two roles are encompassed in the duties of a single person. For other appraisals, these two roles might be held by two people working many time zones away from each other.

### **2.1.1.2 Determine Appraisal Constraints**

**Activity Description**—The constraints under which the appraisal must be conducted are determined based on a dialog between the appraisal team leader and the appraisal sponsor and/or senior site manager. This is typically an iterative process in which the preferences of

the appraisal sponsor, the limits of the method, and the consequent resource requirements are balanced against each other to arrive at an optimal set of appraisal input parameters.

### **Required Practices**

- Establish high-level cost and schedule constraints.
- Determine which process areas (PAs) and organizational entities are to be included.
- Determine the minimum, maximum, or specific sample size or coverage that is desired for the appraisal.
- Negotiate constraints and objectives with stakeholders to ensure feasibility.
- Document negotiated constraints to be met.
- Plan coordination for integration of SCAMPI with People CMM with other SCAMPI methods (e.g., SCAMPI for CMMI), as appropriate. See Appendix I for a discussion of these coordination factors.
- Obtain a People CMM appraisal kit.
- Complete the organizational characteristics questionnaire.

Cost and schedule constraints are captured in the appraisal plan. Constraints and objectives will also be captured in the appraisal plan, including those to be met, managed, or accepted as is.

**Parameters and Limits**—At least one communication between the appraisal team leader and the sponsor is required. Cost and schedule constraints identified during this early stage of the appraisal are expected to be high-level—not detailed—estimates. They might take the form of statements such as “We need this done in Q4,” “You can’t use more than five of my people on the team,” or “I can’t afford to have it last more than a month.” Constraints identified by the appraisal input must be negotiated between the sponsor and the appraisal team leader.

**Optional Practices**—Document the rationale for choices made and the associated tradeoffs as a resource for later planning and future appraisals. Choices and associated tradeoffs will be captured in the appraisal plan.

**Implementation Guidance**—Practical limitations relating to time, cost, and effort are clarified and negotiated in the context of other requirements the sponsor has. The business context in which the appraisal is conducted drives the choices of the appraisal team leader. Appraisals should not be conducted in isolation from other activities relating to process management and improvement. The needs of related stakeholders often place requirements on the conduct of the appraisal.

Obtain a People CMM appraisal kit early for training and preparing the appraisal team. Answers given on the organizational characteristics questionnaire can inform help to identify constraints that will define the scope of the appraisal.

If the decision is to integrate SCAMPI with People CMM with other SCAMPI methods, this should be reviewed and analyzed as early as possible since it could affect the performance of other method activities in SCAMPI with People CMM.

### **2.1.1.3 Determine Appraisal Scope**

**Activity Description**—The appraisal scope consists of the reference model scope and the organizational scope. The reference model scope must be determined and documented early in the planning process. The appraisal team leader is responsible for ensuring that the sponsor makes an informed choice regarding the PAs included in the scope of the appraisal. The selection of appraisal outputs should be driven by the understanding of their intended use established during the requirements analysis activity and might dictate some selections in model scope. The organizational scope defines the bounds of the organization to be investigated during the appraisal.

Instantiations are selected as representative of the organization and the contexts in which processes are implemented. Reconciling the interactions between model scope and organizational scope is an important part of this activity (i.e., for practices implemented by units and related workgroups, each unit and related workgroups; for practices implemented organization-wide, the instance). A particular organizational scope begets a particular model scope; a particular model scope requires a particular organizational scope.

Note that there is a key distinction between the relevance of projects in the SCAMPI model and the People CMM. The equivalent of “projects” in People CMM is organizational units. Thus, when using SCAMPI with People CMM, the unit and related workgroups must be included in the appraisal process scope.

“Unit” has recursive meanings as defined in People CMM, so “unit” can be any organizational entity including and above a project in some organizations. See Appendix E for more information. Units are subsets of an organization, and projects and/or workgroups exist within them. Here, “workgroup” is used the same way it is used in the People CMM (i.e., workgroup or work-group like). In SCAMPI with People CMM, “project” is equivalent to “unit” in People CMM.

#### **Required Practices**

- Determine and document the reference model scope to be used for the appraisal.
- Determine and document the appraised organizations and entities to be investigated during the appraisal.
- Select the appraisal implementation method:
  - People CMM survey only, which is a Class B appraisal and not addressed in this version of the guide
  - stand-alone SCAMPI with People CMM appraisal, which is a Class A appraisal
  - SCAMPI with People CMM appraisal integrated with SCAMPI with CMMI or other assessment/appraisal methods, which is also a Class A appraisal

- If the appraisal plan was not started in the previous activity it should be done at this time.

**Parameters and Limits**—The reference model scope includes the PAs and associated maximum maturity level investigated by the appraisal team (i.e., the goals that will be rated for each PA within the scope of the appraisal).

The model scope of the appraisal must encompass at least one PA. All goals up to and including the maturity level for each selected PA must be rated; individual goals within a PA cannot be excluded. The appraisal implementation method should be identified.

Instantiations must be representative of the implemented processes and functional areas being investigated within the appraised organization and operate within a coherent process context (see glossary for the full definition of “instantiation”). This is also sometimes known as the organizational scope of the appraisal. The rationale for selecting these elements as representative of the appraised organization should be documented.

Typically, the appraised organization will be specified so that

- at least two instances of the processes being investigated are available as sources of objective evidence
- a representative coverage of the units active within the organization is obtained

Selection of instantiations within the appraised organization might be accomplished through a survey (when chosen as an instrument for an appraisal) or through summarizing information learned from discussions with members of the organization. For processes enacted at the organization level (such as workforce planning), multiple instances are not required.

The representative instantiations to be investigated during the appraisal will also drive the selection of participants needed to provide sources of objective evidence. An initial determination of appraisal participants, by name and role, should be negotiated with the appraisal sponsor and/or the senior site manager as part of the early determination of organizational scope. This is refined later during detailed appraisal planning.

All of these initially determined participants are only potential participants. The actual participants are determined prior to the appraisal and as late as possible to maintain more randomness in representative selection. Some participants, such as process owners and some managers, need to be identified earlier due to their roles in the organization, and it is not likely these roles will change.

**Optional Practices**—Use broad-based survey instruments or a practice implementation indicator (PII) database to characterize the population of units and workgroups in an organization before determining the organizational scope of the appraisal.

**Implementation Guidance**—There are two primary parameters of the appraisal enactment that contribute significantly to the resulting cost (in terms of effort): the PA scope of the People CMM model encompassed by the appraisal and the number and size of units and

workgroups selected. While other parameters contribute to the cost and schedule of an appraisal, these two scope parameters provide the greatest opportunity to shape the magnitude of the appraisal.

SCAMPI with People CMM requires that findings for the appraised organization be derived from objective evidence on the implementation of practices collected from each of the organizational process instantiations included in the appraisal. The size and number of instantiations investigated are selected to form a valid sample of the appraised organization to which the results are attributed.

Clearly, a broadly defined appraised organization (e.g., a multinational enterprise) requires collecting and analyzing significantly more objective evidence than a narrowly defined appraised organization (e.g., a specific product line within a specific business unit at a single geographical location).

The organization to which appraisal results are attributed should be described accurately in all statements made by the appraisal team leader and sponsor. It is the responsibility of the appraisal team leader to understand the larger organizational context in which the appraised organization resides. The appraised organization might be a subset of a larger organization (e.g., a division or location within a company). Familiarity with the nature of departmental structures, matrixed subject matter expert groups, integrated product teams, program or project and unit groupings, or product line implications that might affect the interpretation of appraisal outcomes will aid in obtaining this understanding when selecting units and workgroups.

The selection of units and workgroups might not be required in some organizations. However, when an organization is large, sampling might be necessary to make the appraisal representative and practical to perform.

The appraisal team leader should work with representatives from the organization to document a clear statement of the model and organizational scope of the appraisal. The model scope should be documented using a list of PAs to be included in the appraisal, as well as the model components to be rated by the appraisal team. The organizational scope of the appraisal should be documented in the clearest terms possible, given the nature of the organizational structure in place. It is often difficult to specify unambiguous boundaries without naming individuals in some organizations. Information about the appraised organization should be documented in a way that allows future appraisal sponsors to replicate exactly the scope of the organization appraised. This information should be in the appraisal plan and used in briefing the appraisal team and appraisal participants (in summary form if needed).

#### 2.1.1.4 Determine Outputs

**Activity Description**—Identify the specific appraisal outputs to be produced. Some appraisal outputs are required and additional outputs are tailorable (see Parameters and Limits and Optional Practices in this activity).

Obtain clear answers to the following questions:

- What ratings will be generated during the appraisal?
- Will a final report be written to document appraisal results?
- Will recommendations for addressing specific findings be generated and reported?

#### **Required Practices**

- Review required SCAMPI with People CMM outputs with the appraisal sponsor. Review and select optional SCAMPI with People CMM outputs with the appraisal sponsor.
- Determine the recipients of appraisal outputs.

**Parameters and Limits**—Required SCAMPI with People CMM outputs include the following:

- appraisal record (see activity 2.3.2.2 Generate Appraisal Record)
- appraisal disclosure statement (see activity 2.2.4.4 Document Appraisal Results)
- People CMM Steward Data (see activity 2.3.2.3 Provide Appraisal Feedback to People CMM Steward)

As stated in the Assessment Requirements for CMMI (ARC), all the goals for the process area or areas investigated by the team must be rated, although the choice might be made to not disclose the ratings to anyone other than the appraisal sponsor. At a minimum, the sponsor gets the following appraisal outputs:

- final findings, including statements of strengths and weaknesses documented by the team for every PA investigated
- all ratings planned for and generated by the team.

Decisions reached on appraisal outputs, including what ratings are to be reported, are documented in the appraisal input.

**Optional Practices**—The appraisal sponsor might request that additional rating outputs be generated as a result of the appraisal. Typical rating outputs that might be selected include the following:

- maturity level ratings
- practice ratings
- an option to use “partially satisfied” as a rating assigned to a PA
- other (non-typical) outputs

Many of these optional appraisal outputs are discussed further in process 2.2.4 Generate Appraisal Results.

The sponsor might also request that other products be generated as appraisal outputs. Typical products that might be requested include the following (see activity 2.3.1.3 Plan for Next Steps):

- appraisal final report
- recommendations for taking action on the appraisal results
- process improvement action plan

**Implementation Guidance**—Goal satisfaction ratings of the PAs within the scope of the appraisal are a minimum requirement. Maturity level ratings are optional. Reporting the ratings to the appraisal participants is not required even though ratings are performed. The sponsor has sole authority to decide (in advance) which ratings will or will not be reported, and to whom they will be reported.

While statements of findings are a required output of the method, creating a written report that elaborates on the findings is optional. The sponsor should decide if resources are to be spent creating this artifact. Similarly, the task of creating recommendations to address issues uncovered in the appraisal might require expertise that is not represented on the appraisal team. The characteristics of the appraised organization and the constraints that shape its improvement program should be carefully considered when making process improvement recommendations.

#### **2.1.1.5 Obtain Commitment to Appraisal Input**

**Activity Description**—The appraisal sponsor formally approves the appraisal input, and this set of information is placed under change management.

##### **Required Practices**

- Record required information in the appraisal input record.
- Obtain sponsor approval of the appraisal input record and appraisal plan as presently defined.
- Manage changes to the appraisal input, obtaining sponsor approval of changes.

**Parameters and Limits**—The appraisal input might be generated incrementally throughout planning, but must be approved prior to the start of data collection. At a minimum, the appraisal input should provide the information needed to address the following:

- the identity of the appraisal sponsor and the relationship of the sponsor to the appraised organization
- the appraisal purpose, including alignment with business objectives (see activity 2.1.1.1 Determine Appraisal Objectives)

- the appraisal reference model scope (see activity 2.1.1.3 Determine Appraisal Scope)
- the appraised organization (see activity 2.1.1.3 Determine Appraisal Scope)
- the process context, which, at a minimum, includes
  - appraised organization size and demographics
  - application domain, size, criticality, and complexity

If application domain, size, criticality, and complexity are not relevant in the appraised organization, then other characteristics should be identified in planning that are relevant to the process context and business drivers of organization.

- appraisal constraints (see activity 2.1.1.2 Determine Appraisal Constraints), which, at a minimum, include the following:
  - availability of key resources (e.g., staffing, funding, tools, facilities)
  - schedule constraints
  - the maximum amount of time to be used for the appraisal
  - specific PAs or organizational entities to be excluded from the appraisal
  - the maximum, minimum, or specific sample size or coverage desired for the appraisal
  - ownership of appraisal results and any restrictions on their use
  - controls on information resulting from a confidentiality agreement
  - non-attribution of appraisal data to associated sources
- the identity and affiliation of the Lead Appraiser who is to be the appraisal team leader
- the identity and affiliation of the appraisal team members, with their specific appraisal responsibilities
- the identity (name and organizational affiliation) of appraisal participants and support staff and their specific responsibilities for the appraisal
- any additional information to be collected during the appraisal to support the achievement of the appraisal objectives
- a description of the planned appraisal outputs (see activity 2.1.1.4 Determine Outputs), including ratings to be generated
- anticipated follow-on activities (e.g., reports, appraisal action plans, reappraisal)
- planned tailoring of SCAMPI with People CMM (see activity 2.1.2.1 Tailor Method) and associated tradeoffs, including the sample size or coverage of the appraised organization, as permitted by SCAMPI with People CMM
- appraisal usage mode (i.e., Internal Process Improvement or Process Monitoring)

**Optional Practices—None.**

**Implementation Guidance—**A Lead Appraiser's ability to build and maintain commitment from the sponsor and the members of the sponsoring organization is a major factor contributing to the success of the appraisal. The process of understanding the requirements and constraints should yield a series of agreements that form an input to the appraisal plan

(i.e., the appraisal plan might evolve through controlled versions as agreements between the sponsor and appraisal team leader reflect changes). Based on the judgment of the appraisal team leader, these agreements might be covered in a formal, signed document that forms a basis for future activities. More typically, the appraisal team leader maintains a record of interactions with the sponsor, which are incorporated into the appraisal plan as it is drafted.

The appraisal team leader and the sponsor should reach verbal agreement on the items discussed above, and these items should be documented in some way. The formality of the documentation might range from simple meeting minutes maintained by the appraisal team leader, to a more formal memorandum of understanding or other vehicle that documents agreements and provides traceability. The appraisal plan is used to document important issues pertaining to requirements.

## **2.1.2 Develop Appraisal Plan**

**Purpose**—Document the results of appraisal planning, including the requirements, agreements, estimates, risks, method tailoring, and practical considerations (e.g., schedules, logistics, and contextual information about the organization) associated with the appraisal. Obtain and record the sponsor's approval of the appraisal plan.

**Entry Criteria**—An appraisal sponsor and SCAMPI with People CMM Lead Appraiser have agreed to proceed with appraisal planning, based on a common understanding of the key parameters that drive the planning process.

All required information is captured in the appraisal plan, including changes, once the plan has been baselined. There can be evolving versions of the appraisal plan and new versions will also be baselined.

**Inputs**—Documented agreements, reflected in the appraisal input, that support a common understanding of appraisal objectives and key appraisal-planning parameters.

**Activities**—The six activities listed below are required for this process.

2.1.2.1 Tailor Method

2.1.2.2 Identify Needed Resources

2.1.2.3 Determine Cost and Schedule

2.1.2.4 Plan and Manage Logistics

2.1.2.5 Document and Manage Risks

2.1.2.6 Obtain Commitment to Appraisal Plan

### **Outputs**

- approved appraisal plan
- strategy for managing logistics

- strategy for preparing the organization(s)
- schedule
- interview plan
- team assignments
- survey plan

**Outcome**—The sponsor and appraisal team leader agree on technical and non-technical details for the planned appraisal. The plan is refined in conjunction with the other Planning and Preparation phase activities. This agreement is documented and reviewed by affected stakeholders as appropriate.

**Exit Criteria**—The final appraisal plan is reviewed and approved.

**Key Points**—Skilled appraisal team leaders effectively develop and use outputs from the other Planning and Preparation phase activities to achieve the clarity of shared vision necessary to make the tradeoffs and decisions resulting in a final plan. This activity is an important opportunity for the appraisal team leader to demonstrate process discipline and the type of careful planning described in the People CMM model. Experienced appraisal team leaders are able to leverage data, templates, and assets (developed through their own experience) to improve the completeness and effectiveness of the appraisal plan, recognizing the return on investment that is obtained through smooth and efficient appraisals.

**Tools and Techniques**—Tools include an appraisal plan template, samples, and embedded procedural guidance in planning templates. Estimation worksheets and methods for assessing the impact of appraisal constraints are also quite useful.

### **Metrics**

- calendar time spanned by the activity
- effort consumed in carrying out the activities of this process
- level and frequency of changes to the appraisal plan

Metrics are captured in the appraisal plan.

### **Verification and Validation**

- comparison of actual effort for this activity with historical data accumulated by the appraisal team leader
- review of the appraisal plan by affected stakeholders
- sponsor's approval of the plan

### **Records**

- estimation worksheets (if used)

- appraisal plan (for a detailed list of plan contents, see activity 2.1.2.6 Obtain Commitment to Appraisal Plan)

**Tailoring**—In some applications, templates and procedures in routine use within the organization can be adapted to the needs of the appraisal. This aids in communication as well as local ownership of the process.

A structured planning workshop might benefit organizations with limited appraisal experience. Such a workshop is a valuable opportunity to discover risks and develop mitigation strategies.

**Interfaces with Other Processes**—The appraisal plan will guide and define the execution of the appraisal to make it consistent with business needs and constraints. An initial plan can be generated immediately following consultation with the sponsor. Further refinement is done as detailed planning occurs and new information comes to light during appraisal planning and preparation. A final appraisal plan must be completed prior to the completion of process 2.1.5 Prepare for Collection of Objective Evidence. Typically, resources, method tailoring, model-related decisions, and a planned list of outputs are finalized early on, while cost, schedule, and logistics are finalized later while planning and preparing for the appraisal process. When a combined SCAMPI and SCAMPI with People CMM appraisal is planned, one combined plan should be completed.

The appraisal input is necessary to the appraisal-planning process. While it might not be necessary to formally separate the requirements analysis activities from the activities described in this section, prior understanding of the appraisal requirements is a necessary input to this process. The plan for the appraisal provides an important vehicle for the following:

- documenting agreements and assumptions
- establishing and maintaining sponsorship
- tracking and reporting the performance of the appraisal process
- reinforcing commitments at key points in the appraisal process

The distinction between the appraisal input and appraisal plan is intended to separate the key appraisal requirements and strategic objectives, which require high sponsor visibility and change control approval, from the tactical planning details necessary to implement and satisfy these objectives. While sponsor visibility into the appraisal plan is necessary, revisions are typically low-level implementation details and do not ordinarily require sponsor re-approval. In practical use, the appraisal input is often packaged as a component of the appraisal plan, and a single sponsor signature can serve as approval for both.

**Summary of Activities**—This process is composed of six activities summarized below. The scope of the appraisal is defined in terms of the portion of the People CMM model that is investigated and the bounds of the appraised organization for which the results can be considered valid (e.g., a unit, a product line, an operating division, a business unit, an entire global enterprise).

Method-tailoring choices are made to achieve most effectively appraisal objectives within defined constraints of time, effort, and cost. The resources required to carry out the appraisal are identified. The cost and schedule are negotiated and recorded. The details of logistics, particularly for the on-site period, are documented. Risks and risk-mitigation plans are identified and documented. Completion of these activities results in a well-defined, achievable appraisal plan.

### **2.1.2.1 Tailor Method**

**Activity Description**—Tailoring of SCAMPI with People CMM can include the following:

- selection of choices (if any) within the required practices as defined in this interpretation guide for this appraisal method
- setting parameters that are allowed to vary within the Parameters and Limits
- inclusion of Optional Practices defined in this interpretation guide for this appraisal method

Because SCAMPI with People CMM is designed to apply to a wide range of appraisal applications, the tailoring activity is one that deserves careful and thoughtful attention.

Using “partially satisfied” and choosing to do the appraisal in “verification” or “discovery” mode are explicit tailoring options. This plan is designed to clearly indicate which aspects of the method are required and which are tailorable. The Parameters and Limits and Optional Practices sections of each activity description provide discussions of tailoring options in context. In addition, the appraisal usage mode will determine some tailoring choices.

#### **Required Practices**

- Review and select tailoring options within the required practices in each activity defined in this appraisal method.
- Review and set parameters within acceptable limits where variation is expected.
- Review and select appropriate optional practices.
- Ensure that the tailoring decisions are self-consistent and that they are appropriate in light of the appraisal objectives and constraints.
- Document the tailoring decisions made.

All tailoring and decisions are captured in the appraisal plan.

**Parameters and Limits**—The structure of the SCAMPI with People CMM interpretation guide clarifies which SCAMPI with People CMM features are required, either as a direct derivative of ARC requirements or as SCAMPI with People CMM requirements. Parameters and Limits sections define the allowable variation within these method requirements. Tailoring guidance and implementation guidance are provided to assist with tuning the method to fit sponsor objectives and appraisal constraints. Method tailoring and

implementation options must be selected and implemented in a way that does not violate SCAMPI with People CMM required practices.

No tailoring should be made that violates ARC or SCAMPI with People CMM required practices. All required practices performance decisions are captured in the appraisal plan.

**Optional Practices**—Provide the sponsor with more than one candidate scenario for the appraisal, and help them select from the options. Alternatively, the appraisal team leader could define a tailored instance of the method and propose it to the sponsor for approval or to negotiate some of the details.

**Implementation Guidance**—This appraisal method offers a wide variety of choices that allow the appraisal team leader and sponsor to select appraisal features that best address appraisal and business objectives. The SCAMPI with People CMM interpretation guide is an asset provided to Lead Appraisers by the People CMM Steward who assists with understanding SCAMPI with People CMM tailoring and implementation choices.

Method tailoring is directly related to organizational scope and model scope decisions. Most of the allowable tailoring options flow logically from these decisions when taken in context of the appraisal objectives and constraints. Tailoring decisions typically affect the appraisal risk.

Typical tailoring choices that significantly impact appraisal planning include the following:

- People CMM model PAs encompassed by the appraisal
- specification of the organization to be appraised
- number, experience, skills, and affiliation (e.g., internal or external) of appraisal team members
- data collection, analysis, and validation approaches to be used, including supporting work aids and tools
- effort invested by the organization and the appraisal team in preparation, including pre-on-site data collection and analysis
- time spent on site
- choice of models to be appraised (See Appendix I for combined appraisals.)

Experienced appraisal team leaders provide a well-defined approach to ensure that the appraisal objectives are achieved in an efficient and effective manner. Experienced sponsors require a well-defined approach to ensure an acceptable level of risk in meeting objectives within the constraints. The appraisal plan documents the method-tailoring decisions and their rationale, and the associated method variations and techniques that will be employed.

### 2.1.2.2 Identify Needed Resources

**Activity Description**—This activity involves the identification and estimation of resources needed to carry out the appraisal. Resources include personnel, facilities, tools, and access to information.

#### Required Practices

- Identify appraisal team members.
- Identify appraisal participants.
- Identify equipment and facilities.
- Identify other appraisal resources needed.
- Document resource decisions in the appraisal plan.
- Select and invite survey and appraisal interview participants. Activity 2.1.4.1 Plan Survey Administration describes selecting survey participants. On-site appraisal participant selection is described in activity 2.1.5.2 Prepare Data Collection Plan.
- Identify documents and forms required for review.

**Parameters and Limits**—The level of detail in the identification of needed resources must be sufficient to support the creation of the appraisal plan. For example, the appraisal team leader must identify the following:

- the names of people who are candidates for interviews or appraisal team membership
- the organizational or unit affiliation of these people
- the location, seating capacity, and configuration of rooms to be used by the team
- specific equipment needed (e.g., overhead projector, laptop projector, video-conferencing)

All required information is captured in the appraisal plan.

**Optional Practices**—Several months before the appraisal, tour the facility where the appraisal will be held. Assign an individual from the appraised organization to carry out the duties of the appraised organization coordinator (e.g., administrative and logistical support; see activity 2.1.3.2 Select Team Members).

**Implementation Guidance**—Appraisal resources are typically defined early in the appraisal-planning process. Identifying resources goes hand in hand with estimating appraisal cost and schedule (see activity 2.1.2.3 Determine Cost and Schedule), and these might be iteratively refined. Tradeoffs are routinely made in light of the appraisal objectives and constraints.

The appraisal sponsor or senior site manager might identify candidate appraisal team members and appraisal participants. Review of the appraised organization structure or other site-specific information can also be useful for this. Initially, participants can be specified in terms of roles or responsibilities, with names to be determined later. Process 2.1.3 Select and Prepare Team contains additional guidance on selecting appraisal team members.

Equipment and facilities are often negotiated with the appraised organization where the appraisal on-site activities are performed, but sometimes these must be acquired. A room for dedicated use by the appraisal team is usually necessary for private discussions and to protect the confidentiality of appraisal data. Ideally, this is separate from the rooms where interview sessions are held.

The availability of computing resources, such as computers, printers, and networks, is a key consideration that should be planned and understood. Access to special tools or applications might also be needed.

### **2.1.2.3 Determine Cost and Schedule**

**Activity Description**—A top-level cost breakdown and schedule are developed and included in the plan.

#### **Required Practices**

- Estimate the duration of key events as a basis for deriving a comprehensive schedule.
- Estimate the effort required for the people participating in the appraisal.
- Estimate the costs associated with using facilities and equipment (as appropriate).
- Estimate the costs for incidentals (e.g., travel, lodging, meals) as appropriate.
- Document detailed schedule estimates in the appraisal plan.
- Document detailed cost estimates in the appraisal plan.

All required practices performance decisions are captured in the appraisal plan.

**Parameters and Limits**—Effort estimates should be developed for the appraisal team and the expected participants within the appraised organization (e.g., interviewees, respondents to instruments administered, attendees at briefings, support staff). Scheduling for each day of the appraisal is required.

**Optional Practices**—A preliminary daily schedule could be determined for the first baseline of the appraisal plan and built upon from the appraisal input.

**Implementation Guidance**—Cost and schedule might be developed top down based on sponsor objectives and constraints, bottom up based on results of other planning and preparation processes and activities, or more generally using a combination of the two approaches. Scheduling the events and activities of the appraisal is an ongoing logistical task that requires the coordination of many different groups. Determining and communicating a schedule for the appraisal and maintaining ongoing visibility as the details take form are the primary responsibilities of the appraisal team leader. The appraised organization coordinator is expected to provide support for this task, and the appraisal team leader typically selects the person who plays that role with this duty in mind.

The sponsor's needs for appraisal outputs of a specified quality to fulfill a specific purpose, balanced against the resources available to conduct the appraisal, will determine the schedule constraints. Schedule and cost need to be considered for the entire span of appraisal activities. The tradeoff between time spent in preparation versus time spent on site will therefore be a significant factor, as will post-on-site reporting activities.

Organizational costs for preparing and supporting appraisals can be reduced by gathering and maintaining objective evidence for each unit instance. In addition to providing an effective mechanism for monitoring the process implementation and improvement progress of each unit, this enables the availability and reuse of objective evidence for subsequent appraisals.

While the schedule for the appraisal is usually shared with a fairly wide audience, the cost of the appraisal and some elements within the appraisal are often kept from wide view due to the potentially sensitive nature of this information.

#### **2.1.2.4 Plan and Manage Logistics**

**Activity Description**—The logistical details of the on-site portion of the appraisal are negotiated and documented. The appraisal team leader, supported by the appraised organization coordinator, manages planning tasks that document and communicate logistical arrangements. Checklists and action item tracking mechanisms are very important structures used to manage these tasks.

##### **Required Practices**

- Document logistical schedules and dependencies.
- Maintain communication channels for providing status.
- Assign responsibilities for tracking logistical issues.

All required practices performance decisions are captured in the appraisal plan.

##### **Parameters and Limits**

Plan the logistics to support the following appraisal tasks and activities, if not previously provided, including the following:

- all remaining preparation tasks, including team training
- survey administration and processing
- on-site appraisal tasks
- on-site logistics, such as times, rooms, food, security, computer access, printers, secretarial support, and audio-visual equipment
- report preparation
- team travel and lodging
- initial post-appraisal improvement activities

- assignment and orientation of legal representation to review preliminary findings

Effective planning depends on anticipating a variety of logistical issues that might occur during the appraisal. Issues that are sometimes overlooked include the following:

- identifying hotels for people traveling to the appraisal
- providing workstation support
- ordering meals
- interacting with facilities staff on site
- meeting security and classification requirements
- providing badges or arranging for escorts in limited-access facilities

**Optional Practices**—Assign improvement program responsibilities.

**Implementation Guidance**—Every experienced appraisal team leader knows the value of thorough logistical planning and tracking. The time-critical nature of on-site appraisal activities makes it very difficult to manage last-minute changes in important details such as:

- availability of conference rooms and meeting rooms of the appropriate size
- access to rooms, equipment, and supplies needed for administrative tasks
- transportation and/or lodging for team members or the remote members of the appraised organization
- food and other amenities required for adequate working conditions
- communication channels and back-up staff to support the team on site

### 2.1.2.5 Document and Manage Risks

**Activity Description**—As with any unit containing dependencies among events, people, and other resources, risk management is important to success. The appraisal team leader is responsible for documenting and communicating risks and associated mitigation plans to the sponsor and appraisal team members.

#### **Required Practices**

- Identify appraisal risks, including organizational readiness for the appraisal and improvement.
- Develop mitigation plans for key appraisal risks and implement these plans as necessary.
- Keep the appraisal sponsor and other stakeholders informed of the appraisal risk status.

Risks are defined and are captured in the appraisal plan.

**Parameters and Limits**—The risks and mitigation plans identified during this activity are required elements of the appraisal plan (see Parameters and Limits for activity 2.1.2.6 Obtain Commitment to Appraisal Plan). Most Lead Appraisers include a section titled “Risk

Management” in the appraisal plan. The level of effort devoted to risk-management activities is something the appraisal team leader must adjust to fit the situation at hand.

**Optional Practices**—Risks regarding the appraisal team should be included in some situations.

**Implementation Guidance**—The appraisal plan is used to document and track risks to the successful conduct of the appraisal. As with the requirement to address logistical issues during planning, there are no minimum guidelines to be met other than that the plan include identified risks and planned mitigation strategies.

The appraisal team leader is responsible for keeping the appraisal sponsor informed of risk-management activities so that, if needed, timely sponsor intervention is possible to ensure the achievement of appraisal objectives.

### **2.1.2.6 Obtain Commitment to Appraisal Plan**

**Activity Description**—Formal sponsor commitment to the appraisal plan is obtained. The appraisal plan constitutes a “contract” between the appraisal sponsor and the appraisal team leader, so it is vital that this agreement be formal.

#### **Required Practices**

- Document the appraisal plan.
- Review the appraisal plan with the sponsor and secure the sponsor’s approval.
- Provide the appraisal plan to relevant stakeholders for review.
- Ensure the involvement of human resources and other related process owners.
- Identify other stakeholders affected by the appraisal scope and ensure their involvement.
- Obtain commitment of participation from the assessed population.

The appraisal plan is signed by the Lead Appraiser and sponsor when it is baselined.

**Parameters and Limits**—Required contents of the appraisal plan include the following, at a minimum:

- the appraisal input (see activity 2.1.1.5 Obtain Commitment to Appraisal Input)
- the activities to be performed in conducting the appraisal
- resources needed for conducting the appraisal (see activity 2.1.2.2 Identify Needed Resources)
- cost and schedule estimates for performing the appraisal (see activity 2.1.2.3 Determine Cost and Schedule)
- appraisal logistics (see activity 2.1.2.4 Plan and Manage Logistics)
- risks and mitigation plans associated with appraisal execution (see activity 2.1.2.5 Document and Manage Risks)

The plan should also address the following:

- documenting appraisal goals and scope
- identifying the appraisal outputs and their anticipated use
- identifying anticipated follow-on activities
- documenting any planned tailoring of the appraisal method and associated tradeoffs
- identifying risks associated with appraisal execution

There must be a signature block for the appraisal team leader and the sponsor to indicate their commitment to the plan in writing. If minor updates are made to the plan, signatures do not have to be obtained again unless one or more elements of the appraisal input have been changed. At a minimum, the appraisal team members are considered relevant stakeholders and should receive a copy of the approved appraisal plan.

**Optional Practices**—Use a signature block for relevant stakeholders to indicate their commitment to the plan in writing (i.e., each team member signs the plan).

**Implementation Guidance**—While sponsor visibility into the appraisal plan is necessary, revisions are typically low-level implementation details and do not ordinarily require sponsor re-approval. This is in contrast to the appraisal input, which contains strategic, key appraisal requirements, objectives, and constraints. Revisions to the appraisal input must be approved by the sponsor. In practical use, the appraisal input is often packaged as a component of the appraisal plan, and a single sponsor signature can serve as approval for both. The separation of the appraisal input and appraisal plan is intended to provide an appropriate level of sponsor visibility and approval while leaving appraisal team leaders the flexibility to refine the low-level details necessary to complete thorough appraisal planning.

The use of the term “relevant stakeholder” in the context of appraisal planning is intended to be interpreted broadly to include as many of the participants and other affected parties as feasible.

By this time the involvement of human resources and other related process owners should be identified in the appraisal plan and their involvement ensured. If there are other stakeholders affected by the appraisal scope they should be identified in the appraisal plan and their involvement ensured. Obtain commitment to participate from the assessed population by keeping them informed of the appraisal plan and the organization’s objectives for the appraisal.

### 2.1.3 Select and Prepare Team

**Purpose**—Ensure that an experienced, trained, appropriately qualified team is available and prepared to execute the appraisal process.

## **Entry Criteria**

- Appraisal requirements have been documented, at least in draft form.
- Appraisal constraints are understood and documented, at least in draft form.
- The appraisal plan is defined, at least in draft form.
- The appraisal implementation method has been identified (see activity 2.1.1.3 Determine Appraisal Scope).

## **Inputs**

- appraisal requirements and constraints (in draft or final form)
- appraisal plan (in draft or final form)
- Team training materials for
  - People CMM
  - SCAMPI when a combined SCAMPI/People CMM appraisal

**Activities**—The three activities listed below are required for this process.

2.1.3.1 Identify Team Leader

2.1.3.2 Select Team Members

2.1.3.3 Prepare Team

## **Outputs**

- training records
- appraisal team member assignments and qualifications
- a prepared appraisal team that has completed
  - appraisal method(s) training
  - reference model(s) training
  - team-building activities
  - team orientation regarding appraisal

## **Outcome**

The successful completion of this process results in an experienced, trained, and oriented team ready to execute the appraisal for either a stand-alone SCAMPI with People CMM or a combined SCAMPI with CMMI and People CMM. The appraisal team members have acquired the necessary knowledge to play their roles, or their previous knowledge is determined to be satisfactory. The appraisal team leader has provided opportunities to practice the skills needed for each person to play his or her role or has confirmed that these skills have already been demonstrated in the past. The team members have been introduced to one another and have begun to plan how they will work together.

## **Exit Criteria**

- The prepared team is committed to the appraisal.

- Training has been provided and its results recorded.
- Remediation of knowledge/skill shortfalls has been completed (if needed).

**Key Points**— The appraisal team leader is responsible for ensuring that the team is ready to succeed, whether the appraisal team leader trains an intact team or forms a team from a corps of experienced team members.

**Tools and Techniques**—Training course material is available from the People CMM Steward and the CMMI Steward for training teams. This should be tailored or supplemented by the appraisal team leader based on the appraisal context or degree of team member experience. Case studies and exercises are recommended to reinforce the situations team members are likely to encounter during the appraisal.

Other ways of accomplishing this activity might draw on one or more of the following:

- providing supplementary training to experienced team members so that the operational details of the approach used will be familiar
- training a cadre of team members and keeping their knowledge and skills up-to-date as part of an overall program of appraisals

### **Metrics**

- summary of team member qualifications
- effort and calendar time expended to accomplish training
- trainee ratings of instructional materials and approach (if applicable)
- achievement of milestones for remedial activities (if applicable)

The appraisal plan will delineate each appraisal team member's qualifications.

Metrics are captured in the appraisal plan.

### **Verification and Validation**

- approval of team membership and preparation by the sponsor and appraisal team leader
- results of exams used to demonstrate training effectiveness (if used)
- feedback from team members on their readiness to perform their roles

### **Records**

- team member contact information
- training records (if applicable)
- feedback provided by trainees (if applicable)
- team qualification summary (recorded in appraisal plan)

## **Tailoring**

- Case study materials provide a variety of options for expanding the team training course(s) to add emphasis where desired.
- Experienced appraisal team leaders have had success conducting role-plays and simulated appraisal activities without case studies.
- When assembling a team of already-trained members, conduct team-building activities to ensure team cohesion. Many team-building exercises are available for this purpose.
- Team size, skills, and composition are tailoring options in the method.

**Interfaces with Other Processes**—This process includes selecting and preparing the appraisal team. It might occur after obtaining sponsor commitment to the appraisal input. The appraisal plan should be available, at least in draft form, as a necessary input (for contents see activity 2.1.2.6 Obtain Commitment to Appraisal Plan). Selected appraisal team members might provide input into further definition of the appraisal planning. Appraisal team training might provide an initial means to obtain a preliminary understanding of the appraised organization's operations and processes. If available, the appraised organization's PII database from a previous People CMM appraisal or People CMM mini-appraisal is a useful resource for orienting the appraisal team on organizational characteristics, such as the application domain, the organizational structure, the process improvement structure, and approaches for reference model implementation.

Training in SCAMPI is only required when appraisal team members will participate in both SCAMPI with CMMI and SCAMPI with People CMM appraisal activities.

**Summary of Activities**—The appraisal team is a cohesive unit of trained and capable professionals who must meet stringent qualifications. An appraisal team leader is selected to plan and manage the performance of the appraisal, delegate appraisal tasks to team members, and ensure adherence to SCAMPI with People CMM requirements. Appraisal team members are selected based on defined criteria for experience, knowledge, and skills to ensure an efficient team capable of satisfying the appraisal objectives. Training is provided to ensure proficiency in the reference model and appraisal method.

### **2.1.3.1 Identify Team Leader**

**Activity Description**—The appraisal sponsor is responsible for selecting an appraisal team leader who has the appropriate experience, knowledge, and skills to take responsibility for and lead the appraisal. By definition, an appraisal team leader must be a SCAMPI with People CMM Lead Appraiser authorized by the SEI Appraisal Program and a member of that program in good standing.<sup>2</sup> The appraisal team leader is responsible for ensuring that the appraisal is conducted in accordance with SCAMPI with People CMM requirements, with

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<sup>2</sup> The SEI People CMM model and Appraisal Program are described on the SEI Web site at <http://www.sei.cmu.edu/cmm-p/version2> and <http://www.sei.cmu.edu/cmmi/appraisals>.

tailoring to meet appraisal objectives and constraints within allowable bounds defined by the method.

The appraisal team leader must also be a SCAMPI Lead Appraiser when a combined appraisal is performed.

### **Required Practices**

- Select an authorized SCAMPI with People CMM Lead Appraiser to serve as the appraisal team leader.
- Select an authorized SCAMPI Lead Appraiser to serve as the appraisal team leader when a combined appraisal is to be performed.
- Verify the qualifications of the appraisal team leader (experience, knowledge, and skills).

All required practices performance decisions are captured in the appraisal plan.

**Parameters and Limits**—The appraisal team leader must be an SEI-authorized People CMM Lead Assessor and a SCAMPI Lead Appraiser in good standing. These can be verified on the Web or by contacting the SEI People CMM Steward or SEI CMMI Steward directly. There can be only one official appraisal team leader on any given appraisal.

The appraisal team leader has sole discretion to delegate important tasks to appraisal team members but cannot delegate leadership responsibility or ultimate responsibility for the successful completion of the appraisal. The inclusion of multiple Lead Appraisers on a team for a given appraisal can be a strong asset for the leader of that team. However, the single designated appraisal team leader must perform the leadership role and manage the appraisal process.

**Optional Practices**—In some uses of SCAMPI with People CMM, representatives of the appraisal sponsor might be delegated a part of the appraisal team leader's responsibilities in advance of the initial identification of an appraisal team leader, if there is no risk to the integrity of the appraisal. Examples include delivering the participant's briefing and administering the survey. This is typically possible with higher maturity level organizations. When this is done, responsibilities must be approved and agreed to between the appraisal sponsor and the Lead Appraiser.

**Implementation Guidance**—SCAMPI with People CMM Lead Appraisers, by definition, will have participated on a minimum of two appraisals (one as an appraisal team member and one as an observed appraisal team leader). These requirements are part of the SEI Lead Appraiser program. Thereafter, for SCAMPI with People CMM, one appraisal per year will be performed.

When the appraisal team leader performs a combined SCAMPI with CMMI and People CMM appraisal, all requirements for Lead Appraisers defined by the SEI for both People CMM and CMMI must be fulfilled. Refer to the *Standard CMMI Appraisal Method for Improvement (SCAMPI) Version 1.1. Method Definition Document* for details [SEI 01a].

An additional consideration that affects requirements for team experience is the maturity level scope of the planned appraisal. Additional experience might be necessary for the appraisal team leader and/or appraisal team members if the appraisal is used in a high-maturity organization (maturity levels 4-5). Special experience, training, and/or expertise (e.g., statistical process control) might be necessary for that specific appraisal.

Appraisal team leader responsibilities are defined and described throughout the SCAMPI with People CMM interpretation guide, but a summary overview of these responsibilities includes the following:

- confirming the sponsor's commitment to proceed with the appraisal
- ensuring that appraisal participants are briefed on the purpose, scope, and approach of the appraisal
- ensuring that all appraisal team members have the appropriate experience, knowledge, and skills in the appraisal reference model and in SCAMPI with People CMM
- ensuring that the appraisal is conducted in accordance with the documented SCAMPI with People CMM method
- verifying and documenting that the appraisal method requirements have been met

The appraisal team leader might be selected at any time in the appraisal planning phase—preferably upon initiation of appraisal activities so that he or she might participate in analyzing the requirements with the appraisal sponsor. In any event, the appraisal team leader should be identified in time to review and approve the appraisal plan with the appraisal sponsor prior to beginning the on-site portion of the appraisal, and in time to ensure adequate planning and the preparation of appraisal team members.

### **2.1.3.2 Select Team Members**

**Activity Description**—This activity involves identifying available personnel, assessing their qualifications, and selecting them as appraisal team members. It might occur after obtaining the sponsor's commitment to conduct the appraisal and provide input to the appraisal planning.

#### **Required Practices**

- Ensure that minimum criteria for individual team members are met.
- Ensure that minimum criteria for the team as a whole are met.
- Document the qualifications and responsibilities of team members in the appraisal input.

All required practices performance decisions are captured in the appraisal plan.

**Parameters and Limits**—The minimum acceptable team size for a SCAMPI with People CMM appraisal is four people (including the team leader).

All team members must have previously completed the SEI-licensed Introduction to People CMM course, delivered by an instructor who is authorized by the SEI.

When a combined SCAMPI with CMMI and People CMM appraisal is performed all team members must have also previously completed the SEI-licensed Introduction to CMMI course, delivered by an instructor who is authorized by the SEI.

Team member training in the appraisal method is discussed in activity 2.1.3.3 Prepare Team.

The People CMM appraisal team should meet specified appraisal team qualification criteria. Specific team assignment must include the following:

- an SEI-authorized People CMM Lead Assessor
- at least two members from the organization being assessed
- the improvement team lead(s) or software engineering process group (SEPG) member(s) or process owners most closely associated with workforce improvement activities. When an SEPG leader representative is selected for the team, the appraisal team leader (ATL) must ensure that there are no conflicts of interest. The ATL always has the authority to have the SEPG leader representative removed from the team if the integrity of the results will be jeopardized.
- at least one individual with human resources experience. When a local human resources representative is selected for the team, the ATL must ensure that there are no conflicts of interest. The ATL always has the authority to have the local human resources representative removed from the team if the integrity of the results will be jeopardized.
- a mix of backgrounds and job assignments (e.g., systems engineering, software engineering, human resources, communications, financial, marketing) representative of the primary disciplines or domains of the organization's business
- no team member who manages one of the selected appraisal units or is in the supervisory chain of any appraisal participant
- at least one team member should have a minimum of five years experience in one or more of the following areas:
  - human resources management
  - staffing for senior positions
  - implementing workforce training, policies, and practices

The team (as a group) must have an average of at least 6 years of experience, and the team total must be at least 25 years of experience in the business competencies to be covered in the appraisal.

The team (as a group) must have a total of at least 10 years of experience, and at least one team member must have at least six years of experience as a manager.

Team members should not be managers of one of the selected units or be within the direct supervisory chain of any of the anticipated interviewees.

**Optional Practices**—Although not required in the Parameters and Limits section above, the best practices listed below should be employed whenever feasible.

- Each member should have good written and oral communication skills, the ability to facilitate the free flow of communication, and the ability to perform as team players and negotiate consensus.
- At least half of the team members should have participated in a previous process appraisal.
- Team members should be perceived by the appraisal sponsor as credible.

Additional appraisal team member selection considerations include the following:

- Consider the personal characteristics of individual team members (e.g., communication preferences, personality types) and how these might affect the dynamics in a team environment.
- Use one or more authorized Lead Appraisers as team members or a team member that can serve as a facilitator in parallel sessions.

**Implementation Guidance**—Appraisal team members should be a diverse set of qualified professionals with the appropriate experience, knowledge, and skills to make reasoned judgments regarding implementation of the reference model.

The accuracy and credibility of the appraisal results depend on the capability, qualifications, and preparation of the appraisal team members. In addition to the qualifications described above, other factors that might affect the performance of the team or reliability of appraisal results should be considered. Appraisal constraints such as security classification might result in additional criteria for team member selection.

The selected appraisal team members and their organizational affiliations and qualifications (individually and in aggregate) are documented in the appraisal plan. Appraisal team members are typically selected from a pool of qualified individuals provided by the appraisal sponsor or his or her designee. The appraisal team leader is the final authority on acceptance of appraisal team members and is responsible for ensuring their qualifications and suitability for the appraisal purpose.

Situations that present a conflict of interest should be avoided. Team members who manage people or processes in the organization might struggle with their ability to be objective, and team members who are directly impacted by the appraisal outcome might be distracted by the potential consequences of the decisions they contribute to on the appraisal team.

### **2.1.3.3 Prepare Team**

**Activity Description**—The appraisal team leader is responsible for ensuring that appraisal team members are sufficiently prepared to perform the planned appraisal activities. This includes being familiar with the reference model(s), People CMM, CMMI, the appraisal plan, organizational data and characteristics, and the tools and techniques to be used during the

appraisal. Roles and responsibilities are assigned for appraisal tasks. Team-building exercises are used to practice facilitation skills and reach an understanding of the team objectives and how they will be satisfied.

All team members are expected to observe strict rules for confidentiality, the protection of proprietary or sensitive data, and the non-attribution of information to unit participants. Non-disclosure or confidentiality statements are often used to formalize these understandings.

### **Required Practices**

- Ensure that appraisal team members have received reference model(s) training.
- Provide appraisal method(s) training to appraisal team members or ensure that they have already received it.
- Provide for team building and establishing team norms.
- Provide orientation to team members on appraisal objectives, plans, and their assigned roles and responsibilities.

All required practices performance decisions are captured in the appraisal plan.

**Parameters and Limits**—Model training must be provided using the standard Introduction to People CMM and CMMI courses and delivered by instructors who are authorized by the People CMM Steward and the CMMI Steward, respectively.

Method training might be delivered in one of two ways:

1. method training specific to the appraisal at hand
2. method training delivered to a large group of potential future team members who are not currently engaged in an appraisal

Method training delivered to an intact team must be at least two days in duration (three days are preferred) and must emphasize the situations likely to be encountered by team members during the appraisal. This training will not necessarily cover all variants in the application of the SCAMPI with People CMM. For SCAMPI method training, refer to the SEI CMMI Steward.

Method training must cover the complete set of tailoring options and allowable variations for the method to prepare potential team members for a range of situations that are likely to arise during future appraisals. The SEI Appraisal Program specifies additional requirements for delivering training to people who are not already members of an appraisal team. These should be given consideration and documented in the appraisal plan regardless of the training decisions made for the appraisal team members.

Team members who have previously been trained as a member of a prior appraisal team are not automatically qualified to participate on a subsequent appraisal without attending method training. The appraisal team leader must understand the nature of the training delivered

previously and the adequacy of that training for the appraisal at hand, which requires a comparison between the previous appraisal and the planned appraisal.

There must be at least one event where the team gathers as a group for the purpose of establishing team norms and operational decisions about how the team will work for the appraisal at hand.

**Optional Practices**—Some organizations have established an “organic” capability to perform appraisals with very limited preparation through the use of a pool of trained Lead Assessors or appraisal team members. Drawing from an established group of experts who are accustomed to working together clearly provides a savings over time for organizations that conduct frequent appraisals.

**Implementation Guidance**—The team training event is a good place to review the appraisal plan with appraisal team members. (Send the plan to team members in advance.) This event provides the orientation that appraisal team members need to execute their roles appropriately, in keeping with the “Provide appraisal plan to relevant stakeholders for review” required practice in activity 2.1.2.6 Obtain Commitment to Appraisal Plan.

Additionally, the team training event is a primary opportunity to conduct activity 2.1.5.1 Perform Readiness Review. The assembled, trained appraisal team can then assess the organization’s readiness for the appraisal and validate the reasonableness of appraisal estimates.

For CMMI, refer to the SEI’s CMMI Steward.

**Implementation Guidance: Training in the Reference Model**—A typical model training course is delivered in two-and-a-half to three days for each appraisal method. The successful completion of reference model training should precede training in the appraisal method.

There is no “aging” requirement for when model training was received, but the appraisal team leader is responsible for ensuring that each team member has adequate reference model understanding and for taking remedial action if necessary. Attendance at model training needs to be recorded by the training instructor and provided to the People CMM Steward, in accordance with the terms of instructor authorization.

For appraisals that include higher levels (i.e., maturity levels 4 and 5) team members might benefit from additional training, such as attending a course on statistical process control or other advanced topics.

**Implementation Guidance: Training in the Appraisal Method**—A typical delivery of appraisal team training might take two-and-a-half to three days. More or less time might be necessary depending on the experience of the appraisal team members.

Exercises in appraisal techniques and team development are used to reinforce the skills that are important during the appraisal. Exercises should be used that are appropriate for the

organization being appraised. Where sufficient organizational artifacts exist, “live” data can be collected and used in training exercises, where appropriate. Just-in-time training can also be used to re-emphasize method concepts at the points in the appraisal process when the skills are to be used.

Appraisal team training materials should be tailored to fit team needs and objectives for the specific appraisal. Tailoring provides opportunities to

- provide insight into the context, objectives, and plans of the particular appraisal
- communicate team members’ assigned roles and responsibilities
- identify tailoring of SCAMPI with People CMM for the upcoming appraisal
- acquaint the team with the appraised organization’s characteristics and documentation
- focus on skills that might be critical to the upcoming appraisal, such as the ability to facilitate interviews or the ability to identify alternative practices

This training should be provided within 60 days of the appraisal. The appraisal team leader typically provides method training, but other delivery options are also acceptable (as described above). Although alternative training options can provide some advantages and efficiencies for method training, there are also potential consequences that might be felt by the appraisal team leader on a given appraisal, such as poor training quality or readiness of team members. Regardless of how method training is delivered to the team members, opportunities for team building should be provided to unite the team and bring them up to speed on the specifics of the planned appraisal.

**Implementation Guidance: Familiarization with the Appraisal Plan**—Method training and team building provide good opportunities to familiarize the team with the appraisal plan, including appraisal objectives, organizational scope, reference model scope, and the schedule, resources, and constraints. Team member input can be obtained to refine or complete the contents of the appraisal plan.

**Implementation Guidance: Analysis of Objective Evidence**—Analysis of the objective evidence provided by the appraised organization, such as questionnaire responses or worksheets summarizing objective evidence, can be accomplished as an integrated part of appraisal team preparation and training, or afterwards.

Team members should become familiar with the instruments (e.g., document inventory list, questionnaires, PII database) to be used as data collection sources during the appraisal. Demonstrations or exercises using the data collection tools and methods planned for the appraisal should provide appraisal team members with an opportunity to practice techniques for data recording, verification, and analysis. This might include mechanisms such as wall charts, spreadsheets, or data reduction tools. The more familiarity and comfort developed using these tools, the greater the savings in team efficiency during the appraisal on-site phases.

Note that this interpretation guide only addresses Class A SCAMPI with People CMM appraisals, where PII databases are required.

**Implementation Guidance: Roles and Responsibilities**—The appraisal team leader should assign and explain team member roles and responsibilities for the appraisal. Typical roles to be assigned include:

- appraised organization coordinator—handles on-site logistics and provides technical, administrative, and logistical support to the appraisal team leader. This usually includes coordinating schedules, notifying participants, arranging adequate facilities and resources, obtaining requested documentation, and arranging catering. He or she might also coordinate or provide clerical support to the team. This role is often assigned to one or more members of the appraised organization. The appraised organization coordinator might be one of the appraisal team members, or the role could be assigned to other site personnel.
- librarian—manages the inventory of appraisal documents, coordinates requests for additional documentation, and returns documents at the end of the appraisal. This role can be fulfilled by an appraisal team member or by a member of the support staff.
- process area mini-teams—take the lead in data collection in assigned PAs. They ensure that information collected during a data gathering session covers their PAs, request additional information needed relative to their PAs, and record the work performed by individual appraisal team members pertaining to their PAs.

mini-teams typically consist of two or three members. Mini-team assignments can be made based on several factors, including the following:

- related PAs (e.g., PA categories)
- the mix of experience of mini-team members (e.g., discipline experience, appraisal experience)
- facilitator—conducts interviews by questioning interview participants. A facilitator is available for each parallel interview session, and the Lead Appraiser moves between the parallel sessions to verify the process performance of the interviews.
- timekeeper—responsible for tracking time and schedule constraints during interviews and other activities.
- observer—due to the confidentiality required during an appraisal and the cohesiveness needed to participate in appraisal activities, observers are not permitted to participate in the appraisal processes. The only exception is an observer who is authorized by the People CMM Steward to observe a candidate Lead Appraiser's performance as appraisal team leader or to perform an audit as part of the quality audit function of the steward.

Note that some appraisal team members are not trained to participate with both models and methods when a combined SCAMPI with People CMM and SCAMPI appraisal is performed. In these cases, the appraisal team members can sit with the team throughout the consensus, but cannot participate in the consensus discussions for the models in which they are not trained and qualified.

## **2.1.4 Obtain and Analyze Initial Objective Evidence**

**Purpose**—Obtain information that facilitates site-specific preparation and an understanding of the implementation of model practices across the appraised organization. Identify potential issues, gaps, or risks to aid in refining the plan. Strengthen understanding of the organization's operations and processes.

### **Entry Criteria**

- appraisal input received
- sponsor authorization to proceed
- availability of practice implementation data for appraised organization

### **Inputs**

- practice implementation data for appraised organization
- identified participants

**Activities**—The six activities listed below are required for this process.

2.1.4.1 Plan Survey Administration

2.1.4.2 Prepare Participants

2.1.4.3 Administer Instruments

2.1.4.4 Analyze People CMM Survey Results

2.1.4.5 Obtain Initial Objective Evidence

2.1.4.6 Inventory Objective Evidence

### **Outputs**

- completed instruments
- data analyses results (e.g., data summaries, questionnaire results)
- identification of additional information needed
- prepared participants
- initial set of objective evidence

### **Outcome**

- Initial objective evidence has been collected, organized, and recorded.
- Potentially important areas of needed information have been noted.
- The team has a deeper understanding of the appraised organization's operations and processes.
- The team is ready to make detailed plans for data collection.

### **Exit Criteria**

- All objective evidence captured during this activity has been recorded for later use.

- High-priority areas for additional data collection have been identified.
- The level of sufficiency of the objective evidence to support the appraisal is determined.

**Key Points**—Gather high-leverage objective evidence. The amount of initial objective evidence provided by the organization will determine the proportion of evidence that must be discovered (versus verified) during the appraisal. Maximizing time spent in verification (versus discovery) is a key performance objective for the appraisal process.

### **Tools and Techniques**

- Automated support for questionnaires, including data reduction tools, might be available to make data analysis more efficient.
- Breaking into mini-teams to review data related to specific PAs is a way to ensure completeness in the data.

### **Metrics**

- number of practices for which complete objective evidence is available
- number of questionnaire respondents reported in the appraisal record
- calendar time and effort expended for this activity compared to the planned values

Metrics are captured in the appraisal plan.

**Verification and Validation**—Where the team includes members of the appraised organization, these members should be used to help understand the initial objective evidence provided to prevent misinterpretation of terms or special conditions.

Inconsistencies and contradictions among the items provided in initial objective evidence should be identified and recorded for resolution.

**Records**—Records of this process include completed and/or summarized questionnaires, profiles, and surveys. Lists of information needed should be maintained and used as an input to the later data collection activities. Calendar time and effort expended in this activity should be recorded and compared to the plan. These data are part of the appraisal record.

**Tailoring**—A variety of methods can be used to collect initial data, including the following:

- a site information package prepared by representatives of the organization
- a presentation on the process improvement program and its accomplishments
- specialized or general questionnaires focused on practice implementation

The use of additional instruments is dependent on the results of the analysis of available data and the results of process 2.1.5 Prepare for Collection of Objective Evidence.

**Interfaces with Other Processes**—This process plays a critical role in the planning and preparation processes. The information generated in this process provides the most important opportunity to reset expectations and plans with the appraisal sponsor if initial assumptions

about the availability of objective evidence are incorrect. It also provides the basis of data collection planning.

**Summary of Activities**—The appraisal team leader works with representatives of the organization to obtain an initial data set that represents an inventory of the objective evidence pertaining to the implementation of each instantiation of each practice within the appraisal scope. This initial data set is first reviewed by the appraisal team leader for a high-level assessment of adequacy and completeness. The appraisal team leader or appraisal team then performs a more detailed analysis to use as input for planning data collection and verification activities that occur on site. Finally, a record is created with a detailed accounting of any missing objective evidence. This record is used as primary input for the data collection plan.

#### **2.1.4.1 Plan Survey Administration**

**Activity Description**—The surveying phase of a People CMM appraisal involves all aspects of collecting and analyzing data from a People CMM survey. The purpose of the People CMM survey is to collect information about workforce practices from a broad sample of people working in the organization.

Activities performed during this task complete all preparations for administering the People CMM questionnaires. The Lead Appraiser and site coordinator should plan all aspects of administering the People CMM questionnaires. All necessary arrangements should be made for administering the questionnaires, including a specification for the sample of people to whom People CMM questionnaires will be administered. Samples of individuals in the organization are selected to complete a People CMM questionnaire.

The People CMM maturity questionnaires are designed to collect data regarding practices in each key process area of the People CMM. There are two different questionnaires administered during this phase: one for managers/supervisors and one for non-managers/individual contributors.

In addition to planning the logistics, the language in each question should be reviewed in light of local terms or jargon to identify any terminology that is likely to be misinterpreted.

**Required Practices**—Some of the activities typically performed during this task are listed below.

- Identify sample characteristics.
- Identify the number of people to be included in the sample.
- Select participants to complete People CMM questionnaires.
- Ensure adequate survey coverage across the organization.
- Plan survey administration and logistics.
- Arrange final questionnaire administration logistics.

All required practices performance decisions are captured in the appraisal plan.

**Parameters and Limits**—In order to select a representative cross section of survey respondents, the following guidelines should be applied in randomly selecting individuals to respond to the surveys. Sampling guidelines based on organization size are provided below.

- For organizations of 50 or fewer people, everyone should complete a questionnaire.
- For organizations of 51-200 people, questionnaires should be given to at least a 50% sample, with a minimum of at least 50 people completing questionnaires.
- For organizations of more than 200 people, questionnaires should be given to at least a 20% sample, with a minimum of at least 100 people completing questionnaires.

Sampling guidelines based on job assignment are provided below.

- Approximately 25% - 50% (and possibly up to 100% for small organizations) of the managers ranging from first-line supervisors through executives should complete questionnaires.
- At least 20% of the non-managers spanning the entire scope of the organization should complete questionnaires, with individuals being selected to ensure an unbiased sampling with respect to department, division, or other major organizational component, such as
  - assigned workgroup
  - grade or level
  - job type or category
  - type of work or project
  - other important characteristics over which experiences or perceptions of workforce practices might differ, such as gender or length of service with the assessed organization

Refer to Appendix A for information about how to sample.

**Optional Practices**—Identify questionnaire terminology that is likely to be misinterpreted.

**Implementation Guidance**—This sample should be carefully planned to ensure adequate balance and coverage across types of jobs and appraised organizations. The questionnaires should be administered to a mix of employees proportional to the organization's population as a whole.

#### **2.1.4.2 Prepare Participants**

**Activity Description**—Members of the organization who participate in the appraisal must be informed of their role and the expectations of the sponsor and appraisal team. This is typically accomplished through a briefing where the appraisal team leader provides an overview of the appraisal process, purpose, and objectives. Specific information about the scheduled events and locations is also communicated during this presentation, as well as through ongoing contact between the appraised organization coordinator and the members of the organization.

### **Required Practices for Participants to be Interviewed**

- Send an invitation to participate to the survey sample.
- Provide confirmation of the survey schedule and logistics to participants.
- Brief appraisal participants on the appraisal process.
- Provide orientation to appraisal participants on their roles in the appraisal.

### **Required Practices for Appraisal Team Participants**

- Review scheduled activities, roles, logistics, and coordination needs and make necessary adjustments.
- Sign confidentiality agreement.

All required practices performance decisions are captured in the appraisal plan.

**Parameters and Limits**—The orientation provided to appraisal participants must occur some time prior to their participation so they can confirm their availability and prepare for their participation. The preparation of appraisal participants may be accomplished by video or teleconference if desired.

**Optional Practices**—Provide orientation on the documentation of PIIs (see 2.1.4.3 Administer Instruments and Appendix G) and any specific instruments used, so the appropriate people in the organization can document the initial objective evidence to be used in the appraisal.

**Implementation Guidance**—The appraisal team leader will likely work with senior management to help demonstrate the sponsor's commitment to the appraisal process and the process improvement work that will follow. However, in large organizations, the possibility of the same team visiting multiple sites adds coordination tasks and communication channels as well.

Appraisal participants should also be informed of the need to provide accurate and complete information on instruments. In addition to assisting with appraisal accuracy, this can help to ensure sufficient coverage of reference model practices and reduce the amount of time necessary for follow-up interviews. The investment in initial population of complete instruments, such as PIIs (see 2.1.4.3 Administer Instruments and Appendix G), questionnaires, or mapping tables can be recovered by reduced effort in the reuse of assets for subsequent appraisals.

Activities performed during this task orient all appraisal participants to the appraisal process and their role in it. This meeting is used to begin the on-site appraisal activities with participants and to remind participants of the schedule and location of events in which they are involved. All appraisal participants should attend this meeting, including

- appraisal team members
- sponsor

- all people scheduled to participate in questionnaires, interviews or discussions
- others (occasionally customers) at the discretion of the sponsor

In addition to a presentation by the Lead Appraiser, the appraisal sponsor and site coordinator may also give presentations. Some of the topics typically presented include the following:

- appraisal objectives
- introduction of appraisal team members
- appraisal principles (especially confidentiality)
- appraisal activities conducted to date
- appraisal process flow
- times and locations of activities involving participants (including changes)
- relevant logistics

Activities performed during this task allow the appraisal team time to review assignments and schedules and complete any preparations for the appraisal prior to the opening briefing for participants. During this meeting, all members of the appraisal team sign the confidentiality agreement. This agreement is provided to each on-site appraisal participant, and they are asked to sign it (although some organizations choose not to use this agreement with participants).

### **2.1.4.3 Administer Instruments**

**Activity Description**—This activity involves the administration of instruments for the appraisal in addition to the input data, such as process implementation indicators provided by the organization as input to the appraisal. It includes the use of structured techniques and work aids (e.g., surveys, questionnaires, or an objective evidence database [see Appendix G]) to assist the appraised organization in characterizing their process and supporting objective evidence in terms of model practices.

A practice-based questionnaire is also a commonly used instrument. Such questionnaires typically have a series of focused questions, each one providing an opportunity for the respondent to answer a closed-ended question about a practice. In addition, the respondent is given an opportunity to write a clarifying comment that elaborates on the closed-ended response.

Activities performed during this task result in the collection of data from the People CMM survey and the preparation of the data for analysis. The survey participants attend a survey administration session where they are given a briefing that explains the People CMM and its appraisal process. The number of survey administration sessions depends on the number of survey participants and the size of facilities available for this session. The session is conducted by the Lead Appraiser or designee, together with an appraisal team member from the site, typically the site coordinator. The Lead Appraiser or designee presents a short briefing describing the People CMM, the purpose of the survey, and its role in the appraisal

process. During this session the questionnaires or access to electronic versions are given to respondents. Several options might be offered for completing the survey, including the following:

- in a group session
- individually outside of the group session
- online

Unless participants can complete their questionnaires online, it is best for them to complete questionnaires in a group session because appraisal team members will be available to help them understand the intent of the questions and provide directions for responding. Certain questions, such as questions regarding location or employer, might require instructions for the participants that are unique to the appraisal.

Questionnaires are collected and sent for scoring. Questionnaires and scoring services are available as part of the SEI-authorized appraisal kits. Responses to the People CMM survey are scored and prepared into summary reports that describe the results for both the individual and the manager questionnaires. These reports are distributed to the appraisal team prior to the on-site appraisal.

**Required Practices**—Consider using the People CMM survey instrument. While the People CMM survey is optional for level 4 and 5 organizations, it is recommended for lower maturity organizations.

Some of the activities typically performed during this task are listed below.

- Brief People CMM survey participants on the People CMM, the guidelines for questionnaire completion, and the overall appraisal process.
- Monitor the completion of surveys and provide necessary interpretation and guidance to participants.
- Score survey responses and distribute results to the appraisal team members.
- Administer planned appraisal instruments for the entry of data by appraisal participants.

**Parameters and Limits**—Only the instruments identified in the data collection plan can be used. Instruments are typically administered by representatives of the appraisal team, with the appraisal team leader responsible for negotiating additional time and resources if the data is incomplete. The appraisal team leader is also responsible for making sure duplicate data entry on multiple instruments is not requested. No organization should be asked to provide the same information in two or more formats.

Whatever vehicle is used, the resultant data must provide information about the extent of the implementation of model practices in the appraised organization and the sampled units.

**Optional Practices**—Establish an organizational asset (or rely on an existing one) that documents and maintains the traceability of implemented practices to model practices.

The ATL should consider conducting a workshop to document the PIIs for the organization, especially when the organization is new to SCAMPI with People CMM. The workshop will improve understanding of the ways in which PIIs are to be used and instantiated by the units included in the appraisal.

**Implementation Guidance**—Using instruments to gather written information from members of the organization provides a relatively low-cost data collection technique when done well. This type of data tends to be most useful when provided early in the appraisal conduct and can lead to valuable insights about where data might be sought during subsequent data collection events. Since there is limited opportunity for elaboration and branching to related topics, responses to instruments can sometimes raise more questions than they answer. Furthermore, instruments that contain excessive jargon or complicated terminology might hinder data collection. Confused respondents will do their best to answer the question they do not quite understand, and the responses will be interpreted based on the question that was intended. Having a knowledgeable person present during the administration of an instrument can help prevent miscommunication.

Instruments are attractive for data collection because they can be used to establish a “scoring scheme” that reduces the burden of interpretation for the data recipient. Such schemes do not exist for SCAMPI with People CMM, and the use of a shortcut of this type is a violation of the principle that focuses rating judgments on the goals of the PAs in People CMM models. The practices found in the People CMM model are expected components, while the goals in the model are required components. While the satisfaction of a PA goal is predicated on the implementation of practices found in the model (or acceptable alternatives), there is no strict aggregation scheme that allows the inference of goal satisfaction based on practice implementation alone. Rating judgments are based on multiple sources of objective evidence and the reasoned consideration of strengths and weaknesses, in aggregate.

Whenever possible, documents mentioned in the responses to questionnaires or other instruments should be requested for team review early in the process so any misleading references will not cause undue confusion later.

#### **2.1.4.4 Analyze People CMM Survey Results**

**Activity Description**—Activities performed during this task provide information about the consistency of the performance of workforce practices and the major issues related to them.

Survey results are provided to each member of the appraisal team, including the responses to the surveys completed by managers and non-managers. For each individual question, the report provides summary statistical data and written comments related to that question. Each member of the appraisal team should review all responses in the survey report to develop an initial impression of the workforce issues the organization is facing.

Results from analyzing survey data are used in developing the interview scripts employed during the on-site appraisal. No rating decisions are made based solely on survey responses.

**Required Practices**—Some of the activities performed during this task include the following:

- review the survey results
- reach consensus on interpretation of the survey data
- consolidate survey data on process area worksheets

All required practices performance decisions are captured in the appraisal plan.

**Parameters and Limits**—The survey results must be reviewed by the assigned appraisal team members for their respective PAs. The mini-team partners should also review the survey results for their respective mini-team partner's assigned PAs. The mini-team should reach consensus on the interpretation of the results. Any disputes or problems with interpretation should be reviewed with the ATL. When the full team performs its first consensus review, which will most likely include documents and some interview findings, particular attention should be given to the survey data findings.

Survey data must be entered into the process area workbook (PAWB) worksheets (see Appendix J) when the survey is used as an instrument to obtain information about the appraised organization.

**Optional Practices**—None.

**Implementation Guidance**—The SCAMPI with People CMM appraisal process can be organized to incorporate this task into the assessing phase. This task can be completed before the on-site appraisal, as depicted here, or as a task included during the on-site activities.

#### 2.1.4.5 Obtain Initial Objective Evidence

**Activity Description**—The appraisal team leader asks the organization to provide detailed data on the implementation of practices in the organization. The appraisal team leader can specify the format to be used and the level of detail to be provided, keeping in mind that anything not provided in advance must be collected later in the appraisal process. There are no minimum requirements set by the method for the completeness or detail of the initial data set. However, the effort required to conduct a SCAMPI with People CMM appraisal is a direct function of the amount of data available to the team at the beginning of the process. Before the appraisal outputs can be created, the team needs to verify objective evidence for each instantiation in each unit of each practice within the scope of the appraisal. For detailed requirements on data sufficiency, refer to process 2.2.2 Verify and Validate Objective Evidence.

The use of a completely populated PII database (i.e., all requested artifacts have been provided to the appraisal team prior to the document reviews before the interviews) is desirable but not essential at this stage in the appraisal process. The appraisal team leader must give the organization an opportunity to provide it, but will not require it unless the

sponsor has agreed that this will be a verification-oriented appraisal (i.e., information is obtained during the in interview cycles, as opposed to a discovery-oriented appraisal).

A “mapping” of implemented practices and model practices *is* required, and might be generated using questionnaires (see activity 2.1.4.3 Administer Instruments).

**Required Practices**—Obtain documentation reflecting the implementation of model practices within the appraised organization and sampled units.

**Parameters and Limits**—At a minimum, the organization must provide a list of documents that are relevant to understanding the processes in use in the appraised organization and the sampled units. This list must be mapped to the model practices that are in the scope of the appraisal.

**Optional Practices**—A list of terms and important jargon used in the appraised organization might be provided to the team to aid communication with the members of the organization.

A complete objective evidence database, which documents the implementation of every model practice within the scope of the appraisal in the appraised organization and the sampled units may be provided to the team in advance. The use of database tools specifically built to support a process appraisal is highly recommended.

**Implementation Guidance**—Whether collected through instruments, the review of documents, attending presentations, or interviews, the data used for an appraisal is related to the practices of the reference model. For every practice within the model scope of the appraisal and for every instance of each practice, objective evidence is used as the basis for appraisal team determinations of the extent to which the practice is implemented. Indicators that substantiate practice implementation include the following:

- direct artifacts, which represent the primary tangible output of a practice. These are sometimes listed in the People CMM model as examples or can be derived from the practice and sub-practice descriptions. One or more direct artifacts might be necessary to verify the implementation of associated model practices.
- indirect artifacts, which represent artifacts that are a consequence of performing the practice but not necessarily the purpose for which it was performed. These are typically things like meeting minutes, review results, or written communications of status.
- affirmations, which are oral or written statements confirming the implementation of the practice. These are typically validated using interviews, questionnaires, or other means during the onsite period.

Not all practices have indirect artifacts. (See Appendix B.)

Prior to the data collection activities carried out by the appraisal team, an initial data set is usually created by the appraised organization. This data set contains descriptions of the objective evidence available for the team to examine, complete with references to documentation and identification of the personnel who can provide relevant affirmations.

This instrument provides the baseline of objective evidence for the appraisal. Most organizations with experience in process improvement will already have this type of data on hand since they will have used it to track their progress.

Artifacts might be obtained as hard copies, soft copies, or hyperlinks to the documents in a Web-based environment. If hyperlinks are used, the accessibility of artifacts using these links should be verified in the appraisal environment. For example, appraisal team access could be inhibited by invalid references or firewalls.

The initial data set forms the basis for planning the data collection activities, including interviews and presentations on site. Any objective evidence that is not identified before the team's arrival will need to be sought by the team members once they arrive on site. This process of "discovering" whether—and how—the organization has addressed a given practice in the model can be quite time consuming, and it is often difficult to predict how long it will take.

#### **2.1.4.6 Inventory Objective Evidence**

**Activity Description**—The analysis of the initial data set provides critical new information for the overall planning of the appraisal and forms the basis for the detailed data collection plan that must be developed before the on-site data collection begins. The analysis of initial objective evidence at this stage is focused primarily on the adequacy and completeness of information and the implications for future data collection. The results of this analysis are the primary basis for determining the extent to which the appraisal will be one of verification or discovery.

##### **Required Practices**

- Examine the initial set of objective evidence provided by the appraised organization.
- Determine the extent to which additional information is needed for adequate coverage of model practices.

**Parameters and Limits**—Information provided by the appraised organization must be detailed enough to show the extent to which each type of objective evidence (direct artifacts, indirect artifacts, and affirmations) is available for each process instantiation for each model practice within the scope of the appraisal. This initial review of objective evidence identifies model practices for which the team has

- strong objective evidence
- no objective evidence
- conflicting objective evidence
- anomalous objective evidence
- insufficient objective evidence

Key documents are identified that can be used to gain insight into several model practices. These are potential high-leverage documents that might be good candidates for pre-on-site review by team members.

**Optional Practices**—Review the initial objective evidence with the process owners, if needed, to increase understanding.

**Implementation Guidance**—Members of the team might choose to summarize the extent of practice implementation at the discretion of the appraisal team leader. However, the objective of this activity is to determine how much additional data team members will need to complete their work. It is recommended that the appraisal team leader establish an expectation with the sponsor that the results of this analysis will form the basis for a revised schedule estimate. If the initial objective evidence is lacking in completeness and detail, the team will be forced to seek more information during the on-site data collection unless corrective actions are taken before that time.

It is important to keep all stakeholders focused on the fact that the SCAMPI with People CMM is intended as a benchmarking Class A appraisal. This method is not well suited for organizations that have very limited understanding of People CMM. Other organizations might better benefit from a Class B or C SCAMPI with People CMM appraisal, which are yet to be defined.

Deciding on a reasonable implementation of the practices and working to ensure that they are enacted on units throughout the organization are activities that precede a benchmarking appraisal. A different type of appraisal (Class B or C) is likely more valuable if the objective of the sponsor is to begin the process of understanding what People CMM could mean for the organization. It is not reasonable to schedule an appraisal and expect to collect *all* of the data required for benchmarking during the on-site data collection.

The appraisal team leader often reviews the initial data set from the organization before assembling the team for its first meeting to identify areas where additional data is needed and to assess the feasibility of the planned appraisal schedule. This readiness review should be conducted prior to finalizing the appraisal schedule, and might lead to a “go/no go” decision for the appraisal. The appraisal team will then review the initial objective evidence in more detail (typically toward the end of the team training event) to begin formulating plans for collecting missing evidence and for verifying the entire data set. This preliminary readiness review is the basis for the data collection plan, described in the next process, 2.1.5 Prepare for Collection of Objective Evidence. The appraisal team leader generates a list of additional information needed.

The results of the analysis of initial objective evidence are documented as an input to the data collection plan. The use of an integrated appraisal tool to annotate the set of initial objective evidence will permit the automated tracking of information needs and aid in the compilation of a detailed data collection plan. When the completeness of initial objective evidence is

insufficient to conduct the appraisal under the original schedule, the results of this activity form an important basis for renegotiating the appraisal schedule.

The adequacy of objective evidence relative to model practices is typically determined using a software tool of some sort, either one built for use on appraisals or a spreadsheet template. However, paper forms and wall charts can be used if preferred.

## **2.1.5 Prepare for Collection of Objective Evidence**

**Purpose**—Plan and document specific data collection strategies, including the following:

- sources of data
- tools and techniques to be used
- contingencies to manage risk of insufficient data

### **Entry Criteria**

- Sponsor commitment to proceed with the appraisal has been documented.
- Appraisal objectives and constraints have been documented.
- Initial data have been received and analysis has been completed.

### **Inputs**

- appraisal plan
- PII's for the appraised organization
- initial objective evidence review
- data collection status
- People CMM survey results, if the survey was used

**Activities**—The three activities listed below are required for this process.

#### **2.1.5.1 Perform Readiness Review**

#### **2.1.5.2 Prepare Data Collection Plan**

#### **2.1.5.3 Replan Data Collection**

### **Outputs**

- confirmation that objective evidence collected is sufficient to proceed
- initial data collection plan
- updates to the plan as required

**Outcome**—A finalized data collection plan to make team members aware of data needs and the status of initial data available to them.

**Exit Criteria**—All preparations for data collection by the team have been made, and the data collection plan has been documented.

**Key Points**—The data collected is the most important input the team receives. Careful planning, disciplined tracking against the plan, and effective corrective actions are cornerstones to success in this process.

**Tools and Techniques**—Using a spreadsheet to record and track the data collection plan is common. A matrix showing the practices of the model (or questions to be asked) on the vertical axis and the sources of information on the horizontal axis provides a simple planning and tracking tool.

**Metrics**—Examples include the following:

- estimated and tracked calendar time and effort for this activity
- planned and actual number of data sources per practice
- planned and tracked number of scripted questions per interview
- planned and tracked number of scripted questions per PA
- percentage of planned coverage achieved, per data collection event or PA

Metrics are captured in the appraisal plan.

**Verification and Validation**—The data collection plan should be summarized and reviewed with the team to ensure that appraisal requirements are successfully implemented if the plan is carried forward. Experienced Lead Appraisers will use historical data to assess the feasibility of (and risks associated with) the data collection plan.

**Records**—Planned and actual coverage of practices and PAs across the set of data collection activities should be recorded. These data support future estimates and corrective actions during the data collection activities.

**Tailoring**—Replanning is performed only when the status of the appraisal conduct indicates the need to do so.

Additional planning and coordination steps might be necessary when data collection activities occur at geographically distributed sites. SCAMPI with People CMM allows flexibility in the strategies used to accomplish the necessary data collection. The relative emphasis on different data sources and types can be tuned to support buy-in, coverage, and rigor for important areas.

**Interfaces with Other Processes**—The data collection plan is an essential element of the appraisal plan. It is created after the initial objective evidence is analyzed and contains a set of strategies for collecting the data needed to meet the objectives of the appraisal. The data collection plan is reviewed and revised on a continual basis throughout the appraisal.

Processes critical to the success of the appraisal include dynamically managing the inventory of data on hand, the list of data needed, and the available data collection opportunities

**Summary of Activities**—The activities in this process serve to (a) establish the initial planning baseline for the acquisition of objective evidence and (b) update the plan to account for information acquired and unexpected developments. Since SCAMPI with People CMM is a data-intensive method, the conduct of these activities in accordance with the descriptions provided is essential to the successful use of the appraisal method.

### 2.1.5.1 Perform Readiness Review

**Activity Description**—The available objective evidence is reviewed to determine how much of the requested objective evidence has been gathered and whether it is sufficient to proceed or if replanning is required.

#### Required Practices

- Determine whether the objective evidence for each process instance is adequate to proceed with the appraisal as planned.
- Review the feasibility of the appraisal plan in light of the inventory of objective evidence available.

The decision after review is captured in the appraisal plan.

**Parameters and Limits**—At least one readiness review must be conducted and enough time allowed for the team to make use of the information before the team is assembled on site for data collection.

Objective evidence for all PAs within the scope of the appraisal and all units sampled to represent the appraised organization must be reviewed. In small organizations or in organizations with few units, sampling should not be necessary. In large organizations, sampling might be a pragmatic, if not necessary, solution to controlling costs in a Class A appraisal. An organization might have only one unit, or, at the other extreme, too many units to perform an appraisal for a reasonable investment of time and money. All sampling should be random, but selected units should represent the demographics of the organization (i.e., all units within the scope of the appraised organization are included in the sampling approach). Sampled units are represented by the interview of the managers selected (sampled). More units, if not all, can be represented when the individual contributors (ICs) are randomly selected for the IC interviews. At a minimum the sampled units will have ICs interviewed. However, in most cases ICs will represent more units than those sampled. Refer to Appendix A for more information about sampling.

While objective evidence in the form of documents is required during the initial document review (IDR), it might also be requested during the interviews and might come from units not sampled.

In large organizations, workgroups within units will also be sampled. Again, the sampling should be random and representative of the unit in which the workgroups reside.

More workgroups are represented when interviewing the ICs. At a minimum the selected (sampled) workgroups are represented, but other workgroups should participate in the IC interviews. This is especially important in large organizations. While objective evidence in the form of documents is not required for these non-selected workgroups, it may be requested during the interviews.

**Optional Practices**—Integrating a readiness review with the team training event will allow the appraisal team leader to help the team understand the data available to support the appraisal.

**Implementation Guidance**—A summary of the inventory of objective evidence and readiness to proceed should be reviewed with the sponsor or his or her designee. If insufficient objective evidence is available, the appraisal team leader might need to initiate replanning in light of newly discovered constraints. See activity 2.1.1.2 Determine Appraisal Constraints. The criteria for adequacy will depend on where the readiness review occurs in the schedule and the degree of verification versus discovery that is being sought for the on-site phases of the appraisal.

More than one readiness review will likely be needed. The first one should be performed early in the planning phase and the second once the objective evidence has been gathered and the appraisal is ready to start. This review might be conducted in conjunction with the team-training event.

Thresholds for the sufficiency of data should be established as targets for the readiness review. For example, an 80% threshold might be used to initiate replanning at the final readiness review. That is, the appraisal team leader establishes an expectation with the sponsor that if more than 20% of the objective evidence is missing at the time of team training, the appraisal will need to be replanned. However, the primary goal is to reduce the risk that there will be insufficient objective evidence to make the determinations required by the appraisal plan in the time allotted. Thus, whenever possible receiving 100% of objective evidence prior to interviews should be the goal. Thresholds are included in the appraisal plan.

The readiness review is a key event whose impact should not be underestimated. Failure to adequately review the objective evidence available and determine the impact on the appraisal plan can have grave consequences for the appraisal team during the on-site period. This might include long hours, exhaustion, extensive ad hoc data collection (discovery), or the inability to achieve appraisal objectives within defined estimates and constraints.

### **2.1.5.2 Prepare Data Collection Plan**

**Activity Description**—The data collection activities are tailored to meet the needs for objective evidence so that the extent of practice implementation can be determined.

For practices that have objective evidence, a strategy for verifying evidence is formulated.  
For practices that lack objective evidence, a strategy for discovering evidence is formulated.

The data collection plan is typically embodied in a number of different artifacts used during the appraisal process. The appraisal plan includes information about the site, units, and participants involved in the appraisal.

This is the highest level of information that helps document and communicate the data collection plan. Detailed information on data collection can be recorded in work aids that manage appraisal data and in the appraisal schedule. A record of "information needed" items is the most detailed representation, while document lists, interview schedules, and the assignment of PA mini-teams help shape the strategy for obtaining the needed data.

### **Required Practices**

- Determine participants for interviews.
- Determine artifacts to be reviewed.
- Determine presentations and demonstrations to be provided (e.g., process owners can present the rationale behind the approaches taken by the organization, and demonstrations can be given for online appraisal systems, knowledge management systems, and skills databases).
- Determine team roles and responsibilities for data collection activities.
- Document the data collection plan.

**Parameters and Limits**—For every instantiation of every model practice, the data collection plan must specify how, when, and by whom the objective evidence will be verified.

For instantiations of model practices that have not been addressed in the initial objective evidence, the data collection plan must specify how the team intends to discover the presence or absence of objective evidence that characterizes the extent of implementation for that practice.

The data collection plan (often documented in a variety of artifacts) includes the following:

- assignment of PAs to team members and mini-teams
- summary of initial objective evidence provided by the organization
- identification of highest priority data needs
- initial allocation of data needs to data-gathering events
- identification of instruments to be administered
- identification of participants to be interviewed
- interview schedule, revised to include more detail
- identification of a starter set of interview questions
- identification of documents still needed (if any)

- risks associated with the sufficiency of the data and the adequacy of the schedule

**Optional Practices**—Review the status of the objective evidence database with members of the appraised organization to elicit additional objective evidence or to expand on the evidence available. This allows the appraisal team leader to validate the data collection plan to some extent.

**Implementation Guidance**—Sources of objective evidence include instruments, documents, presentations, and interviews (see process 2.2.1 Examine Objective Evidence). Objective evidence is differentiated in terms of PII type (e.g., direct artifacts, indirect artifacts, and affirmations) as described in activity 2.1.4.5 Obtain Initial Objective Evidence. A combination of these indicator types is required for corroboration (see activity 2.2.2.1 Examine Objective Evidence). The data collection status is continually monitored during appraisal activities (see process 2.2.3 Document Objective Evidence) to ensure that sufficient data coverage is obtained. These are all key considerations that should be understood and accounted for in the generation of the data collection plan.

Multiple types of interviews can be used to obtain face-to-face affirmations (see activity 2.2.1.4 Examine Objective Evidence from Interviews):

- standard structured interviews scheduled in advance and using scripted questions
- on-call interviews, scheduled in advance for calendar purposes, but held only if necessary
- office hours interviews, for which interviewees are notified that they might need to be available as a contingency during scheduled periods

A robust data collection plan will provide for all three types of interviews. Start with a full set of scheduled interviews early in the planning phase and gradually add, eliminate, or modify them as the inventory of initial objective evidence indicates the need. The mini-teams might conduct office hours interviews, even during team training, to more fully populate the inventory of objective evidence prior to the start of the on-site data collection activities.

Planning for document reviews should include organizational-, unit-, and implementation-level artifacts, as described in activity 2.2.1.3 Examine Objective Evidence from Documents.

Ultimately, the appraisal team will need to have data on each practice in the People CMM model for each organizational element in the appraisal scope. For PAs addressing practices implemented at the unit level (e.g., training and development), data on each instantiation of the practice will be collected. For PAs addressing practices implemented at the organization level (e.g., competency analysis), only one instantiation of each practice might be needed, depending on the way the organization chooses to implement such practices.

Presentations can be provided by process owners (POs) for their respective PAs. While presentations can be useful if they address the points in the model's PAs, POs might have other agendas and the presentation might not sufficiently address the practices. Therefore, either the PO should be provided with a format for addressing practices, or sufficient time at the end of the presentation should be allocated for appraisal team members to ask questions

to achieve coverage. Presentations should be affirmations of direct and indirect evidence already provided, but the appraisal team member must ensure that coverage is achieved.

The results of the analysis of initial objective evidence are used to determine which practices are not already covered with objective evidence. Practices for which no initial objective evidence has been provided should be identified as high-risk areas for the team to address immediately. The schedule for data collection might need to change dramatically if the team is unable to find relevant data for these areas in short order. For practices that have data available in the initial objective evidence, the team members assigned to the PAs plan the strategy for verifying the implementation of each of the practices through review of the named documents, interviews with the people who play the named roles, or other data collection events. Artifacts used to manage data collection events are populated with the current understanding of the planned data collection events, as listed below.

- The schedule for interviews is finalized so participants can be informed that they are expected to participate.
- The list of documents on hand (or accessible electronically) is finalized so the team members know what is and what is not available for document review.
- A preliminary allocation of practices to be covered in each of the scheduled interviews is documented.
- A list of needed documents (not yet available to the team) is generated, if there are any known needs for documents at this point.

### **2.1.5.3 Replan Data Collection**

**Activity Description**—The data collection plan is updated as required during the conduct of the readiness review or during the appraisal itself as objective evidence is found or new sources of information are uncovered. The activity described in this section refers to a more substantial change in the plan, which is expected to be rare in practice. If during the conduct of an appraisal, the team discovers that their assumptions about the availability of objective evidence are substantially incorrect, the appraisal team leader might renegotiate the appraisal plan with the sponsor.

#### **Required Practices**

- Review the current inventory of objective evidence and determine model practices for which the objective evidence is inadequate relative to the appraisal plan.
- Revise the data collection plan as necessary based on the appraisal status and availability of objective evidence.
- Renegotiate the appraisal plan with the sponsor if the appraisal cannot proceed as planned.

All required practices performance decisions are captured in the appraisal plan.

**Parameters and Limits**—This activity is not a substitute for tactical decisions about where and how to find objective evidence. The intent of this activity is to respond to a major gap between expected data and actual data.

Major gaps between expected and actual data might occur, for example, as a result of the following:

- inaccurate assumptions about the availability of objective evidence
- content of artifacts or information from interviews not providing significant amounts of the information required and other sources not being planned
- unexpected absence of multiple key interviewees
- unanticipated delays in the implementation of new processes
- major customer-driven emergencies for one or more of the sampled units

**Optional Practices**—Risk analysis can be conducted during early planning activities to establish thresholds and limits for the amount of missing objective evidence that will trigger this activity. This enables the appraisal team leader to state, in advance, the conditions under which the team and the sponsor must renegotiate the appraisal plan.

Contingency planning done in advance to identify ways of overcoming issues associated with missing objective evidence could include the following:

- an alternate (fall-back) schedule for the appraisal
- staffing to conduct a “crash data collection” activity
- reducing the scope of the appraisal (e.g., appraising fewer PAs, limiting the extent of the appraised organization appraised)

**Implementation Guidance**—This activity serves as a “pressure valve” of sorts for the appraisal. The pressure to perform the appraisal under unrealistic conditions can lead to a severe degradation in the quality of the appraisal outputs. Carefully planning for contingencies and communicating them to the sponsor help to protect the standards that must be met in the performance of an appraisal. Clearly documenting the data collection plan and regularly monitoring the availability of data compared to the plan support effective risk mitigation.

When this activity must be employed to recover from an unrealistic expectation, the documentation reflecting the assumptions made during planning, as well as concrete facts about what is or is not available, are used to renegotiate with the appraisal sponsor. This is one reason a detailed appraisal plan, with the sponsor’s signature, is a required artifact for the conduct of a SCAMPI with People CMM appraisal.

## 2.2 Phase 2

This phase has four processes: Examine Objective Evidence, Verify and Validate Objective Evidence, Document Objective Evidence, and Generate Appraisal Results.

### 2.2.1 Examine Objective Evidence

**Purpose**—Collect information about the practices implemented in the organization and relate that data to the reference model in accordance with the data collection plan. Take corrective actions and revise the data collection plan as needed.

#### Entry Criteria

- Data collection has been planned.
- The sponsor has approved the appraisal plan.
- The appraisal team is trained and is familiar with the appraisal plan.
- Participants have been informed about the appraisal process and their roles in it.

#### Inputs

- appraisal data
  - initial objective evidence
  - documents
  - documented practice implementation gaps, if any
  - feedback on preliminary findings (if that point in the timeline has been reached)
- data collection plan
  - appraisal schedule
  - interview schedule
  - document list
  - new interview questions

**Activities**—The four activities listed below are required for this process.

2.2.1.1 Examine Objective Evidence from Instruments

2.2.1.2 Examine Objective Evidence from Presentations

2.2.1.3 Examine Objective Evidence from Documents

2.2.1.4 Examine Objective Evidence from Interviews

#### Outputs

- updated appraisal data
- updated data collection plan

**Outcome**—After the final iteration of this process, the team has sufficient data to create appraisal findings and to make judgments about the implementation of practices, as well as the satisfaction of goals.

**Exit Criteria**—The reference model and the organizational scope have been covered, and the team is ready to produce the appraisal outputs.

**Key Points**—The efficient collection of objective evidence results from the careful creation and execution of the data collection plan. Key points to consider are effective contingency planning and the use of work aids to monitor progress. The team must be able to focus on examining the most relevant information available rather than be distracted by rooting out new evidence.

**Tools and Techniques**—Wall charts and other visual aids are often used to display the results of data collection activities. Electronic tools are prevalent among experienced Lead Appraisers and can be very effective for continually monitoring and updating the inventory of objective evidence.

**Metrics**—Tracking the actual coverage obtained against the planned coverage in each data collection activity facilitates timely corrective actions where they are needed. The most critical resource during an appraisal is time. A timekeeper provides feedback on team performance during data collection and verification activities. Recording the actual duration of planned events helps the team recover from unexpected events.

Metrics are captured during the appraisal.

**Verification and Validation**—The appraisal method provides detailed verification and validation procedures for objective evidence. The procedures are described in process 2.2.2 Verify and Validate Objective Evidence.

**Records**—Work aids used to record and track the progress of data collection activities are retained for traceability and provide an important input to a final report describing the appraisal, if the sponsor requests a final report. The duration and effort required for specific data collection events can be recorded to provide historical data useful for planning subsequent appraisals.

**Tailoring**—The method is flexible in the use of customized data collection instruments, presentations, document reviews, and interviews. Specialized forms of these data collection methods can be constructed to meet the objectives of the appraisal. Rather than a standardized questionnaire, an organization-specific questionnaire could be used that contains local jargon. However, this must be done with care to ensure the questionnaires do not lead respondents to the preferred answers. Standardized presentations can be employed to provide the team with an “inbrief” at the start of the appraisal (e.g., PO presentations or demonstrations of tools or databases). The method also provides flexibility in choosing the

number, duration, style, and make-up of interview sessions within specified boundaries and allows telephone and video conferences.

**Interfaces with Other Processes**—The activities that provide the team with data needed to produce reliable appraisal outputs are perhaps the most visible part of the appraisal process for the appraised organization. For this reason, SCAMPI with People CMM places a heavy emphasis on methodically planning and tracking the data collected during an appraisal. The initial objective evidence collected early in the process allows team members to analyze the state of information available at the earliest stages of the appraisal and narrow their search for new information. An explicit understanding of what information is needed and how that information will be used drives the activities associated with this process.

**Summary of Activities**—Team members continually manage the data collected previously and work to fill known information needs. Instruments tend to be used early in the appraisal process to provide leads for other data collection activities and affirmations of implemented practices.

Presentations are sometimes used to provide a flexible forum where members of the organization can provide important information about the practices implemented in the organization.

Documents are the most explicit and lasting representation of practice implementation in the organization, and the team uses them to understand how practices in the People CMM model are implemented. Interviews are used as the most dynamic data collection technique, allowing for branching among related topics and the explanation of contextual information that affects the implementation of practices and alternative practices. The appraisal activities conducted for each of these data collection sources are listed below.

- Determine if the information obtained is acceptable as objective evidence.
- Relate the objective evidence to corresponding practices in the appraisal reference model.
- Relate the objective evidence to the appropriate part of the appraised organization (i.e., the instantiation).

### **2.2.1.1 Examine Objective Evidence from Instruments**

**Activity Description**—Instruments provided by the appraised organization are reviewed to obtain objective evidence reflecting the organization's implementation of model practices (e.g., the administered survey results). Instruments include questionnaires, surveys, and other written information that indicates practice implementation.

This activity builds on the inventory of objective evidence developed during appraisal planning and preparation. The appraisal team considers the information contained in the instruments and determines if it is accurate, consistent, and relevant to the scope of the reference model being examined.

Objective evidence obtained from instruments and from other sources is verified in 2.2.2 Verify and Validate Objective Evidence and documented in process 2.2.3 Document Objective Evidence.

### **Required Practices**

- Review information obtained from instruments and determine if it is acceptable as objective evidence.
- Determine the model practices corresponding to the objective evidence obtained from instruments.
- Determine the portions of the appraised organization that correspond to the objective evidence obtained from instruments.
- Develop scripts after review of the survey results.

All required practices performance decisions regarding use of instruments are captured in the appraisal plan.

**Parameters and Limits**—At least one instrument must be used during the conduct of the appraisal. (Refer to 2.1.4.3 Administer Instruments for a description of instruments.) For SCAMPI with People CMM, the standard SEI set of questions for the survey can be used. Also the evidence database, instantiated from the PIIs for People CMM, can be used as an instrument.

**Optional Practices**—Create and administer a specialized questionnaire tailored to the characteristics of the organization or the objectives of the appraisal. The People CMM survey could also be used.

**Implementation Guidance**—Using instruments to gather written information from members of the organization is a relatively low-cost data collection technique, when done well. Data of this type tend to be most useful when provided early in the appraisal conduct and can lead to valuable insights about the location of the data during subsequent data collection events.

The most common instrument used is the organization's PII database, which provides traceability of reference model practices to the processes and work products implemented within the organization. If organizations have not yet implemented this asset, a questionnaire can be used to gather closed-ended responses and comments about the implementation of each model practice in each sampled unit in the appraised organization.

It is also the responsibility of the appraisal team leader to prevent duplicate data entry on multiple instruments. No organization should be asked to provide the same information in two or more formats.

Activities performed during the survey provide appraisal team members with information about the consistency of workforce practices and the major issues related to them. The survey responses provide guides for workforce practices or issues that should be probed during

document review and interviews. They also provide data to corroborate information found in other data-gathering tasks. Activities that constitute this task were discussed in task 2.1.4.4 Analyze People CMM Survey Results. If these activities have already been completed prior to the on-site appraisal, this task might be shortened and only involve a short review of any issues related to survey results.

Activities performed during this task result in the creation of scripts to guide the interviews of process owners and managers and the discussions with the workforce. Once the appraisal team consolidates data from the survey results and documents, they should script questions for interviews to gather further data that corroborate strengths and weaknesses. These scripted questions allow the appraisal team to probe for more information about their preliminary observations and elicit further information when needed during the on-site interviews. Generally, in each management interview or workforce discussion, at least one question should be asked about each goal in each process area in the scope of the appraisal. Additional questions should be asked in those areas where there is greater uncertainty regarding the consistency of the practices. The appraisal team has the option of developing interview scripts for the process owners, managers, and workforce discussions during the same session or in separate sessions held prior to each type of interview. If the appraisal team develops all scripts in a single scripting session, they should review the scripts immediately before each type of interview to find out if the information being collected needs to be adjusted.

Some of the activities typically performed during this task are listed below.

- Write question scripts for each process owner to be interviewed.
- Write a question script to be used during manager interviews.
- Write a question script to be used during workforce discussions.
- Review interview scripts for coverage, time, and information needed.
- Determine interview roles.
- Revise scripts based on results of previous interviews.

Note that scripting goes on throughout the appraisal. Scripts are modified based on the coverage results and information needed to complete coverage.

### **2.2.1.2 Examine Objective Evidence from Presentations**

**Activity Description**—Demonstrations of online tools or libraries to be accessed by the appraisal team are often the best way for members of the team to find data and information. The history of process improvement in the organization or the status of current improvement units can sometimes be best conveyed to the appraisal team in the form of a presentation. While the amount of data to be collected using presentations is minimal, the ability to receive information and ask questions in real time makes this a valuable data collection technique.

Objective evidence obtained from presentations and from other sources is documented in process 2.2.3 Document Objective Evidence and verified in process 2.2.2 Verify and Validate Objective Evidence.

### **Required Practices**

- Receive presentations from the appraised organization, if applicable.
- Review information obtained from presentations, and determine if it is acceptable as objective evidence.
- Determine the model practices corresponding to the objective evidence obtained from presentations.
- Determine the portions of the appraised organization that correspond to the objective evidence obtained from presentations.

All required practices performance decisions about the use of presentations are captured in the appraisal plan.

**Parameters and Limits**—Presentations are not required in the data collection plan, but the team may permit presentations of information by knowledgeable members of the organization. Presentations might or might not be required by the team, depending on the appraisal usage mode and the appraisal objectives.

All team members need not be present at every presentation, though it might be advantageous. A minimum of two team members must be present in order to consider any presentation a valid data collection session. Team members take notes during presentations to document information for later use, as described in activity 2.2.3.1 Take/Review/Tag Notes.

**Optional Practices**—Allow the organization to provide presentations or demonstrations of tools as a means of providing objective evidence about the implementation of model practices. Establish a standardized boilerplate for the appraised organization or units in the appraised organization to use in orienting the appraisal team during the presentation.

**Implementation Guidance**—Presentations about the history of process improvement in an organization can be revealing and can help to shape further data collection.

Demonstrations of tools supporting the process infrastructure are sometimes the most convenient means of communicating objective evidence. Tools that are commonly demonstrated include the following:

- metrics database
- process asset library and tools
- process-related Web pages
- computer-based training courses or training repositories
- risk management databases

- human resources databases or human resources information systems
- knowledge management systems
- skills management databases

An organization's metrics database can often embody the analytical techniques in use and the communication channels that are supported across the appraised organization.

### **2.2.1.3 Examine Objective Evidence from Documents**

**Activity Description**—A substantial portion of the data used by appraisal team members is derived from documents they review. Most of the direct artifacts used as indicators of practice implementation are documents. Document review is an effective way to gain detailed insight into the practices in use in the organization. However, without a clear focus on the data being sought, document review can consume a great deal of time as team members sometimes attempt to read everything in hopes that something useful will be discovered.

Objective evidence obtained from documents and from other sources is documented in process 2.2.3 Document Objective Evidence and verified in process 2.2.2 Verify and Validate Objective Evidence.

#### **Required Practices**

- Establish and maintain a catalog of documents used as a source of objective evidence.
- Review information obtained from documents, and determine if it is acceptable as objective evidence.
- Determine the model practices corresponding to the objective evidence obtained from documents.
- Determine the portions of the appraised organization that correspond to the objective evidence obtained from documents.

All required practices performance decisions regarding documents are captured in the appraisal plan.

**Parameters and Limits**—All SCAMPI with People CMM appraisals must use documents as a source of information about the extent to which practices have been implemented in the appraised organization and the sampled units.

The catalog should be sufficient to summarize the documentation of objective evidence used as a basis for the appraisal ratings generated, as required by the appraisal record described in activity 2.3.2.2 Generate Appraisal Record.

Much of the catalog contents can be obtained from the mapping data or instruments obtained from the appraised organization, such as the PII database, survey, or questionnaires. The catalog can be used to maintain a list of documents reviewed or additional documentation requested from the appraised organization.

**Optional Practices**—For organizations with substantial intranets containing Web-based document libraries, a member of the organization familiar with the document library should provide a demonstration of the Web-based tools. Links to other documents and other features of the Web-based document library must be tested prior to the team's use during the appraisal.

**Implementation Guidance**—One or more team members will seek data for every practice in the model scope of the appraisal through document review. This does not require a unique document for every practice, as any given document is likely to provide data relevant to multiple practices. To the greatest extent possible, the location of documented evidence relating to every practice should be recorded in advance of the team's arrival at the site where the appraisal will occur. Organizations with established improvement infrastructures typically maintain this type of information in order to track their improvement efforts against the model.

If this information is incomplete, the team will need to discover the linkages between the People CMM model and the organization's implemented practices and will therefore require more time to perform the appraisal.

**Implementation Guidance: Three Levels of Documents**—Documents reviewed during an appraisal can be classified into different levels: organization, unit, workgroup, and implementation. By providing further insight into the policies and procedures that guide the organization's processes, organization-level documents sometimes help the team to eliminate the need for a question during an interview or to sharpen the focus for a question. A review of these documents provides a context for understanding the expectations placed on units within the organization.

Through the review of unit- and workgroup-level documents, team members gain further insight into each scheduled interviewee's role in the unit and workgroup they support and the terminology generally accepted within the organization or unit and workgroup. This might lead to the refinement or modification of interview questions.

The team typically reviews implementation-level documents to validate information gathered from other sources, such as interviews or higher-level documents. Documents on this level provide an audit trail of the processes used and the practices performed by the organization. The review of these documents frequently provides verification of practices found in organization- and unit-level documents.

Activities performed during this task provide one source of evidence regarding the organization's workforce practices. The review of documents and artifacts helps the appraisal team to do the following:

- establish an organizational context for evaluating workforce practices
- understand how workforce practices are supported by the organization
- identify workforce practices or issues to be probed during interviews

- ensure that a portion of the observations of each process area goal is supported by a review of the relevant documentation described in the People CMM
- map the organization's documents to the People CMM so the information can be used as appraisal data

All collected documents should be made available to the appraisal team in their secured work area during the entire on-site appraisal period. If some important documents are too sensitive to be released or copied for use by the appraisal team, they can be reviewed where they are maintained or under the supervision of the document owner during an interview session.

#### **2.2.1.4 Examine Objective Evidence from Interviews**

**Activity Description**—Interviews are used to obtain face-to-face affirmations relating to the implementation of processes at the organizational, unit, and workgroup levels.

Interviews are held with process owners, managers, and individuals responsible for the work being performed. The appraisal team uses interviews to understand how the processes and workforce practices are implemented and to probe areas where additional coverage of model practices is needed.

Interviews are a required component of a SCAMPI with People CMM appraisal. The criteria for the amount of face-to-face evidence to be collected are described in activity 2.2.2.1 Verify Objective Evidence. This drives the development of the initial interviewing strategy in the data collection plan described in activity 2.1.5.2 Prepare Data Collection Plan and the interview scripts prepared in 2.2.1.1 Examine Objective Evidence from Instruments. A variety of interviewing techniques are available, and the appraisal team leader works with the team to schedule the most appropriate interview types.

As objective evidence is gathered throughout the appraisal, the data collection plan is revised. By using focused investigation techniques, the need for interviews might be increased or diminished, as long as the criteria for face-to-face affirmations are satisfied.

Objective evidence obtained from interviews and from other sources is documented in process 2.2.3 Document Objective Evidence and verified in process 2.2.2 Verify and Validate Objective Evidence.

#### **Required Practices**

- Refine the data collection plan to determine the objective evidence that must be obtained from interview participants.
- Revise interview scripts, as needed, to ensure the collection of the objective evidence that must be obtained from interview participants.
- Review information obtained from interviews and determine if it is acceptable as objective evidence.

- Determine the model practices corresponding to the objective evidence obtained from interviews.
- Determine the portions of the appraised organization that correspond to the objective evidence obtained from interviews.

All required practices performance decisions regarding interviews are captured in the appraisal plan.

**Parameters and Limits**—All SCAMPI with People CMM appraisals must use interviews as a source of information on the extent to which practices have been implemented in the appraised organization and within the sampled units.

All interviews must include at least two members of the appraisal team, designated by the appraisal team leader.

Full coverage of the People CMM model within the defined scope, the appraised organization, and the organization's life cycle must be achieved with the objective evidence considered by the team. Therefore the pool of potential interviewees must cover all elements of the process in use in the appraised organization.

Unit and/or program management personnel are typically interviewed individually, but in large organizations can be grouped according to units. The focus of the discussion in these interviews can be scoped to a particular unit rather than across sampled units. Individuals are typically interviewed in a group discussion, sampled across the units and grouped by levels of seniority or roles within the appraised organization. The focus of the discussion in these interviews will therefore be scoped to a particular set of practices used across the units. The rules of confidentiality and the expected use of appraisal data must be communicated to every interviewee.

In a subset of interview sessions, an interviewee might have a reporting relationship with an appraisal team member in attendance. This might be unavoidable when doing sampling of interviewees. In these cases the appraisal team member can be excused by the ATL for these sessions and the process area responsibilities delegated to this appraisal team member's mini-team partner or another appraisal team member.

**Optional Practices**—Request that interviewees bring a document or other artifact with them to their interviews for a "show-and-tell" style interview. Use video/teleconference technology to conduct interviews at a distance. Appraisers should not rely too heavily on this method. If substantial portions of the interview data are gathered using this technology, it might limit the amount of information collected.

**Implementation Guidance**—Interviews provide the most flexible source of detailed data. Face-to-face interaction with people who enact the practices being investigated allows the team to seek detailed information and understand the interrelationships among various

practices. Detailed information to address specific data collection needs can be sought and verified in real time.

Avoid sampling interviewees for a session that results in two people in the same reporting chain (e.g., a superior and one of his or her direct reports) in the same interview session. This applies to members of the appraisal team as well. People who have this type of relationship with one another might be uncomfortable being candid during the interview. Should an interviewee and an appraisal team member have a reporting relationship, the appraisal team member should be asked not to participate in that session. The ATL should reassign the interview question responsibilities for these PAs to the mini-team partner, another appraisal team member, or to the ATL.

To get good data from the sessions, individual interviews should be stratified by longevity of service (1-5, 5-10, 10+ years), or by types or categories of employees.

Samples of interviewees are typically grouped into categories that roughly correspond to life-cycle phases, engineering disciplines, organizational groupings, and/or PA affinities. As stated previously, interviews of unit/program management personnel are typically grouped by unit, while individuals sampled for a given interview come from across the appraised organization.

There are three basic forms of interviews used in SCAMPI with People CMM, described below.

**Implementation Guidance: Standard Interviews**—The most structured approach is the standard interview, which is scheduled in advance and uses a series of scripted questions. Each standard interview typically involves interviewees with similar responsibilities in the organization (e.g., process owners, workforce members, or managers). The schedule and location of each interview session is communicated to the interviewees well enough in advance to permit their attendance. Questions intended to elicit data about particular practices are prepared and reviewed in advance, and the team follows a defined process for conducting the session. The entire team is present for these interviews. Responsibility for tracking the coverage of individual PAs is typically assigned to team members. A single questioner might lead the interview with the rest of the team listening and taking notes, or the responsibility for asking questions might be distributed among the team members. In any case, all team members who are not asking questions should listen and take notes for all questions.

An alternative is to have the team work in parallel interview mini-sessions (e.g., the team might be partitioned into subsets to address the PAs assigned in parallel sessions). All units in the organization are potentials for interviews via the manager and workforce interviews.

A set of planned interviews is defined during appraisal planning. As the appraisal progresses and the objective evidence accumulates, the team might find it convenient to cancel one or more of these interviews to use the time for other activities. Such changes in the data

collection plan should be made in a way that does not violate the coverage criteria described in process 2.2.2 Verify and Validate Objective Evidence.

**Implementation Guidance: On-Call Interviews**—A more flexible approach to scheduling interviews is available in the form of on-call interviews, a variant of the standard interview. Prospective interviewees are identified and notified in advance, just as described above. However, the interviews are only held if team members decide that they are needed and that the time will be well spent.

The prospective interviewees are asked to block off a period of time and are informed whether or not the interview session will actually happen well ahead of time. These interviews need not include the entire appraisal team, permitting parallel sessions with different interviewees. However, at least two members of the appraisal team (selected by the appraisal team leader) must participate.

**Implementation Guidance: Office Hours Interviews**—Office hours interviews represent an agreement for availability that permits pairs of team members to visit interviewees at their desks, cubicles, or offices. As with the on-call interviews, the prospective interviewees block off a specific time period to be available on a contingency basis. Most prospective interviewees will be able to continue with their daily work and accommodate an interruption if the team needs to speak with them. Again, the interview will occur only if specific data needs are identified. The interviewees should be informed that they might receive only limited advanced notice for these interviews, although confirming the interview at least a day in advance is a courtesy that should be offered whenever possible.

Interviews are conducted with three types of people when using SCAMPI with People CMM: process owners, managers, and workforce.

**Interview Process Owners**—During this task, information is collected from those who are responsible for workforce practices at the organizational level. This information describes the workforce practices and support in place at the organizational level. These interviews provide the team with organizational perspective and do not necessarily provide information about the actual implementation or consistency of these practices at the working level. These interviews might also provide an opportunity to review documentation retained within a process owner's area. It is typically better to interview process owners from different functions separately to make better use of their time and carefully focus the interview objectives, but a mixture of POs can also be scheduled.

The types of process owners typically interviewed include the following:

- human resources staff
- training department staff
- compensation specialists
- staffing specialists

- performance management specialists
- career development or succession specialists
- competency analysts
- team-building specialists
- building and maintenance staff
- computing facilities staff
- interview managers
- other individuals or groups as appropriate

Activities performed during this task involve collecting information from those who are responsible for performing workforce practices. Interviews with managers allow the appraisal team to

- determine the consistency of the workforce practices used by managers at the unit or workgroup level
- identify differences or inconsistencies in workforce practices across major appraised organizations
- identify any unique or unit- or site-specific workforce management practices
- understand the relationship between the workforce practices supported at the organization level and how they are performed at the unit and workgroup level
- understand the middle managers' perspectives on how workforce practices are performed
- identify workforce practices that managers believe should be improved

Managers selected for interviews could be functional or matrix managers, team leaders, project leaders, middle managers, or unit or workgroup managers. Managers should be sampled to obtain adequate representation of areas and managerial levels in the organization.

To allow the fullest sampling of managers across the organization, these interviews should be conducted by mini-teams composed of two to three appraisal team members. Each mini-team will typically conduct two manager interviews. Thus, two to four mini-teams each conducting two interviews will collect data from a total of four to eight managers. Each mini-team should interview one manager at a time unless there is a sensible reason for other managers to be included, such as a shared performance of workforce practices.

During the interview, one mini-team member acts as the lead interviewer while other team members take notes on the manager's responses. The lead interviewer opens the session and explains the interview context and confidentiality guarantees. The lead interviewer then asks questions from the scripts prepared in advance and manages progress to ensure that all required questions are completed before the scheduled close of the interview. Other mini-team members might ask follow-up questions or request clarifications.

Following their initial manager interview, each mini-team performs a minimal consolidation of the data that they have collected to identify areas they wish to highlight or de-emphasize during their second manager interview. Interview scripts are revised if necessary.

**Conduct Workforce Discussions**—Activities performed during this task involve collecting information from those who experience workforce practices. A workforce discussion typically involves a group of 8 to 12 individuals (but groups can be larger) who are invited to discuss their experiences in the organization. These groups are prompted with questions from the scripts prepared for use with the workforce, but the discussion is free flowing. Workforce discussions allow the appraisal team to

- understand how the workforce experiences the organization's workforce management practices
- identify workforce practices that the workforce believes should be improved
- determine the consistency of the workforce practices used by managers at the unit level
- corroborate data provided in process owner and manager interviews
- identify differences or inconsistencies in workforce practices across major appraised organizations
- identify any unique unit, workgroup, or site-specific workforce management practices
- understand the relationship between the workforce practices supported at the organization level and how they are performed at the unit or workgroup level

Individuals selected for workforce discussions can come from any job type included in the scope of the appraisal. Individuals should be sampled to obtain adequate representation of units, assignments, and job types. Discussion groups could be organized by job type, work assigned, or some other relevant characteristic (e.g., junior vs. senior staff).

To allow the fullest sampling of the workforce, these discussions should be conducted by mini-teams composed of two to four appraisal team members. Each mini-team typically conducts two workforce discussions. Thus, two to four mini-teams each conducting two workforce discussions will collect data from a total of 32 to 160 individuals.

During the discussion, one mini-team member acts as the lead interviewer while other team members take notes on the responses. The lead interviewer opens the session and explains the discussion context and confidentiality guarantees. Participants are asked not to discuss anything they hear during the discussion to protect confidentiality. The lead interviewer then asks questions from the scripts prepared in advance and manages progress to ensure that all required questions are completed before the scheduled close of the discussion. Other mini-team members might ask follow-up questions or request clarifications.

Following the interview, each mini-team should perform a minimal consolidation of the data to identify areas they wish to highlight or de-emphasize during their second workgroup discussion. Discussion scripts are revised if necessary.

Some of the activities typically performed during these three sets of interviews are listed below.

- Explain confidentiality and purpose of the discussion.
- Ask scripted questions.
- Record responses.
- Ask follow-up questions and request clarifications.
- Ask for final comments.
- Indicate the time and place of participants' next involvement.

Additional activities typically performed during this task are listed below.

- Set up the interview room.
- Introduce the participant(s) to the interview process.
- Ask scripted questions.
- Record notes.
- Conclude the interview.

## **2.2.2 Verify and Validate Objective Evidence**

**Purpose**—Verify the implementation of the organization's practices for each instantiation and validate the preliminary findings, describing gaps in the implementation of model practices. Each implementation of each practice is verified so that it can be compared to the practices of the People CMM model, and the team characterizes the extent to which the practices in the model are implemented. Gaps in practice implementation are captured and validated with members of the organization. Exemplary implementations of model practices can be highlighted as strengths to be included in appraisal outputs.

**Entry Criteria**—Objective evidence about the implementation of practices in the organization has been collected. Gaps in the implementation of model practices have been identified, and the team is ready to characterize the extent to which model practices (or acceptable alternatives to those practices) have been implemented. Descriptions of practice implementation gaps at the level of the appraised organization are crafted for validation.

### **Inputs**

- appraisal plan, with schedule and participants for data validation activities
- data on practice implementation and strength and/or weakness statements
- data collection plan, specifying any additional information needed

**Activities**—The three activities listed below are required for this process.

#### **2.2.2.1 Verify Objective Evidence**

#### **2.2.2.2 Characterize Implementation of Model Practices**

### 2.2.2.3 Validate Practice Implementation Gaps

#### Outputs

- updated appraisal data
  - notes
  - strength/weakness statements
  - annotated worksheets
- updated appraisal artifacts
  - preliminary findings
  - revised data collection plan
  - requests for additional data

**Outcome**—The team's confidence in the material that will form the basis for appraisal outputs is increased and the process of transferring ownership of these results has been started. Any critical deficiencies in the data on hand have been identified and actions to resolve these issues have been initiated.

**Exit Criteria**—The team has recorded data on the implementation of practices in the organization and characterized the extent to which practices in the model are implemented. In addition, strength and weakness statements have been validated with members of the organization who provided appraisal data.

**Key Points**—This activity spans a number of distinct events in the appraisal method that together accomplish the same goal—ensuring the validity of the appraisal data and associated outputs. Managing the interaction with people outside of the team is a vitally important process to ensure that the results are accurate.

**Tools and Techniques**—Facilitation techniques to guide the team through difficult decisions are important during this activity, just as they are during the rating activity. Techniques to enhance the credibility of the preliminary findings are also important. Using a flip chart or note-taker during the presentation of preliminary findings is often effective for instilling confidence among audience members.

**Metrics**—Planned versus actual effort expended for this activity (as with all activities) will assist in monitoring progress and planning subsequent appraisals. Gauging the level of acceptance for preliminary findings can be facilitated by computing the percentage of findings adjusted based on feedback, then comparing this value with past experience.

Metrics are captured during the appraisal and maintained in the appraisal plan.

**Verification and Validation**—The attendees of preliminary findings presentations are likely to express agreement or discuss the data being validated. The appraisal team leader needs to ensure active participation in these activities as a way of verifying that the process is working as intended. The actions taken following the appraisal will provide feedback to help validate the success of this activity.

**Records**—Characterizations of practice implementation, strength and/or weakness statements, and changes made based on feedback are recorded for subsequent use by the team.

**Tailoring**—Validating data is required, but a variety of choices for orchestrating this process are available. The most common approach is the preliminary findings presentation. The use of an instrument or a more targeted focus-group approach to validate statements of practice implementation gaps is permitted (e.g. a preliminary report that is reviewed by representatives in the organization or the use of a subset of the participants interviewed).

Also, the relative emphasis of mini-team-based verification and verification carried out by the team as a whole can be adjusted to meet the skills and preferences of the team at hand.

**Interfaces with Other Processes**—During the conduct of an appraisal, the team must gather and analyze a great deal of detailed information. Processes described earlier in this document clarify how data are gathered and examined. The process described here is focused on understanding the information revealed by the data. The processes described after this one are focused on recording important information and making reliable and valid rating judgments based on the verified and validated data.

**Summary of Activities**—The initial objective evidence provided by the organization is used to understand how practices are to be implemented. Members of the appraisal team then seek information to confirm that the intended practices are indeed implemented. This first validation activity (2.2.2.1 Verify Objective Evidence) might reveal gaps in the actual implementation that are not apparent in the initial objective evidence provided by the organization. The next verification activity (2.2.2.2 Characterize Implementation of Model Practices) then compares the implemented practices to the practices in the People CMM model.

This activity might also reveal gaps in the implementation(s) that will later affect the ratings assigned by the team. Standard characterizations to capture the extent of practice implementation, first at the unit level and then at the appraised organization level, are recorded by the team, along with descriptions of gaps in implementation. When team members have achieved their planned coverage of data collection, the descriptions of gaps are validated with the members of the organization. This final activity before rating allows team members to build confidence that their investigation has been thorough, and the members of the organization are provided with an opportunity to correct any perceived errors in the appraisal data.

#### **2.2.2.1 Verify Objective Evidence**

**Activity Description**—The appraisal team must establish a clear understanding of the practices implemented in the organization. Typically, the organization provides a set of objective evidence at the beginning of the appraisal process, and the team sets out to verify the instances where those practices are implemented. For practices reflecting unit- or

workgroup-level activities, the team must determine if each selected unit or workgroup in the appraised organization has evidence of implementation. For practices reflecting organization-level activities, the team must understand the organization-level implementation as well as any activities involving the unit or workgroup that indicate the implementation of the practice.

### **Required Practices**

- Verify the appropriateness of direct artifacts provided by each instantiation for practices within the model scope of the appraisal.
- Verify the appropriateness of indirect artifacts provided by each instantiation for practices within the model scope of the appraisal.
- Verify the appropriateness of affirmations provided by each instantiation for practices within the model scope of the appraisal.
- Verify that the implementation of each model practice is supported by direct artifacts for each instantiation and corroborated by indirect artifacts or affirmations.
- Obtain face-to-face affirmations for either at least one instantiation for each model practice in the scope of the appraisal, or at least 50% of the practices corresponding to each goal for each instantiation. The 50% rule is applied to the sampled units for SCAMPI with People CMM. (Refer to Appendix B for more information about the 50% rule.)
- Generate statements describing gaps in the appraised organization's implemented practices relative to practices defined in the reference model.

**Parameters and Limits**—For practices implemented at the unit or workgroup level, direct and indirect indicators of practice implementation must be examined for every unit or workgroup sampled to represent the organization being appraised.

For practices implemented at the organization level, direct and indirect indicators of practice implementation are examined in reference to the appraised organization within the scope of the appraisal, and not necessarily for each unit sampled. Aspects of the practice that are implemented at the unit level must be investigated for every unit sampled to represent the appraised organization.

One or more direct artifacts are needed to verify implementation of each model practice. Indirect indicators can include artifacts or affirmations. Objective evidence is differentiated in terms of different types of PII's (direct artifacts, indirect artifacts, and affirmations), as described in activity 2.1.4.5 Obtain Initial Objective Evidence.

Coverage criteria for face-to-face affirmations are focused at the goal and appraised organization level.

**Optional Practices**—At the discretion of the appraisal team leader, verification of practices at the instantiation level might be carried out solely by the mini-teams. Team-wide review

and consensus about practice implementation can then focus on the aggregate-level characterizations. Mini-team consensus should be planned into the schedule and performed prior to the full team consensus discussions.

At the discretion of the appraisal team leader, the verification of practice implementation at the unit and workgroup level can be reviewed for consensus by the entire team. Each mini-team provides an overview of practice implementation indicators for each unit and workgroup sampled to represent the appraised organization.

A mix of the two strategies above can be used, selectively reviewing targeted PAs in different ways, or gradually changing from one strategy to the other as the team gains familiarity with the data and the process.

**Implementation Guidance**—The typical work products listed in the People CMM model provide examples of artifacts that can be used as indicators of practice implementation. However, the model does not distinguish between direct and indirect artifacts; these are examples and are not required. Alternatives can be used for both direct and indirect artifacts. (See Appendix B.)

Typically, much of the objective evidence required to perform this verification is provided in advance of the on-site period. The primary focus of data collection is to permit the team to verify that the intended practices are implemented across the appraised organization. Where the implemented practices differ from the intended practices, the objective evidence provided at the start of the appraisal process is annotated to more accurately reflect the implemented process in the organization. These annotations are typically statements describing a gap in the implementation of a model practice, some of which will eventually become findings.

Where gaps exist in the objective evidence provided in advance, the appraisal team is forced to undertake data collection activities to populate the data set from scratch. An organization that has a substantial process improvement infrastructure in place is expected to have documented its implementation of the model in detail. For organizations with relatively little experience using People CMM, the cost of this discovery process might be so great that undertaking an ARC Class A appraisal, such as SCAMPI with People CMM, might not be cost-effective. For such organizations, a Class B or C appraisal might be more appropriate to determine gaps in organizational performance.

Only after team members have a clear understanding of the implemented practices can they compare them to the model to characterize the extent to which the organization implements the practices in the model or acceptable alternatives. Artifacts that result from the performance of the practice will be available for viewing by the team. These artifacts, as well as face-to-face interactions with members of the organization enacting the practice, help to verify that the practice was enacted as intended by the maintainers of the organizational process.

### 2.2.2.2 Characterize Implementation of Model Practices

**Activity Description**—Once a critical mass of practice implementation evidence has been verified, the team (or mini-team) turns to characterizing the implementation of model practices. For each practice in the model included in the selected scope and each instance of expected use, the team will document a characterization of the extent to which the model practice (or an acceptable alternative) has been implemented. These unit and workgroup-level characterizations are then aggregated to the appraised organization level.

Characterizations of practice implementation are used as a means to focus appraisal team effort on areas where professional judgment is needed and to aid in reaching team consensus on the extent to which practices are implemented.

#### Required Practices

- Characterize, for each instantiation, the extent to which reference model practices are implemented.
- Aggregate practice implementation characterization values from the instantiation level to the appraised organization level.

All required practices performance decisions are captured in the appraisal plan.

**Parameters and Limits**—The following table summarizes rules for characterizing instantiation-level implementations of practices. Consensus of at least a subset of appraisal team members (e.g., mini-team members) is necessary for instantiation-level characterizations.

*Table 1: Rules for Characterizing Instantiation-Level Implementations of Practices*

Label	Meaning
Fully Implemented (FI)	<ul style="list-style-type: none"><li>• The direct artifact is present and judged to be appropriate.</li><li>• At least one indirect artifact and/or affirmation exists to confirm the implementation.</li><li>• No substantial weaknesses were noted.</li></ul>
Largely Implemented (LI)	<ul style="list-style-type: none"><li>• The direct artifact is present and judged to be appropriate.</li><li>• At least one indirect artifact and/or affirmation exists to confirm the implementation.</li><li>• One or more weaknesses were noted.</li></ul>
Partially Implemented (PI)	<ul style="list-style-type: none"><li>• The direct artifact is absent or judged to be inadequate.</li><li>• Artifacts or affirmations suggest that some aspects of the practice are implemented.</li><li>• One or more weaknesses were noted.</li></ul>
Not Implemented (NI)	Any situation not covered above.

When tagging using the process area workbook sheets for each PA, an artifact (direct or indirect) will only be noted when it is judged to be appropriate and adequate. A weakness might exist for a particular unit or workgroup when a required artifact is not in evidence, while at the same time other units and workgroups do have the evidence.

It is possible that some practices will not have direct or indirect artifacts in the People CMM. Refer to Appendix C for more information.

Consensus of all members of the appraisal team is necessary for appraised organization-level characterizations.

The following table summarizes rules for aggregating instantiation-level characterizations to derive appraised organization-level characterizations. The column labeled “condition” is the input condition—the practice implementation characterizations for the set of sampled units. The column labeled “outcome” is the resultant aggregated practice implementation characterization at the appraised organization level.

**Table 2: Rules for Aggregating Instantiation-Level Characterizations to Derive Appraised Organization-Level Characterizations**

Condition	Outcome	Remarks
All X (e.g., all LI)	X	All instantiations have the same characterization.
All LI or FI	LI	All instantiations are characterized LI or higher.
Any PI, no NI	LI or PI	Team judgment is applied to choose LI or PI for the organizational unit.
Any NI	NI, PI, or LI	Team judgment is applied to choose LI or PI for the organizational unit.

**Optional Practices**—While the initial characterization of practice implementation might be proposed by a mini-team or some subset of the team, the selections listed below are available.

- Instantiation-level characterization of practice implementation can be reviewed by the entire team for consensus.
- Team-wide review and consensus on practice implementation characterization can be reserved for the appraised organization level.
- A mix of the two strategies above, tailored to match the learning curve of the team members or to reflect the prioritization of particular PAs, can be used.

Additionally the Lead Appraiser reviews these tables with mini-teams during the appraisal.

**Implementation Guidance**—When the team is ready to perform the ratings, these characterizations simplify the judgments. The team is then able to focus on the aggregation of weaknesses observed to determine the goal satisfaction ratings (as explained in process 2.2.4

Generate Appraisal Results). Situations where the unit has not yet reached the time where the practice would be enacted are omitted from this characterization. The appraisal-planning activities are expected to prevent situations that severely limit the examples of actual implementation for any given practice. These are rare in the People CMM where, as an organization-centric model, it is expected that organization practices would have been deployed across units and workgroups in the organization. Nonetheless, rare situations might exist due to timing of the deployment activities if full organization roll out might not have occurred completely.

The characterization of People CMM practice implementation begins as soon as sufficient data are available. It is not necessary that data for every instantiation be available before the implementation of any given practice can be characterized at the instantiation level. However, before the implementation of a practice across the appraised organization can be characterized, the instantiation-level characterizations must be completed.

Each instance of practice enactment is characterized using the instantiation level characterization scheme. The characterization of practice implementation for the appraised organization is carried out using the aggregation rules summarized in Table 2. These rules provide a basis for identifying the areas where professional judgment is required and simplify the areas where the data are unanimous.

### **2.2.2.3 Validate Practice Implementation Gaps**

**Activity Description**—Verification activities lead to statements summarizing gaps (weaknesses) in the implementation of model practices. Optionally, statements reflecting exceptional implementations of model practices (strengths) might also be generated. These statements can be generated at various points in the appraisal process, such as when initial objective evidence is obtained. Implemented practices are compared to the practices in the reference model, and the extent of implementation is characterized for each unit or for the appraised organization.

To prepare for validating this information, the appraisal team generates preliminary findings that summarize the practice implementation gaps. The preliminary findings are written in reference to a single model practice and are abstracted to the level of the appraised organization. The statements should not reference a specific individual, unit, workgroup, or other identifiable organizational sub-unit.

This is still primarily a data collection activity, and the intent is to validate the appraisal team's understanding of the processes implemented within the appraised organization. Feedback from participants might result in modifications to the appraisal team's inventory of objective evidence. The results of the validation activity must be considered in the formulation of final findings and goal ratings. These latter activities cannot commence until after the validation activity has occurred.

## **Required Practices**

- Validate preliminary findings with member(s) of the legal community for the organization.
- Generate preliminary findings summarizing gaps in practice implementation observed with the appraised organization relative to reference model practices.
- Validate preliminary findings with members of the appraised organization.

All required practices performance decisions are captured in the appraisal plan.

**Parameters and Limits**—Full appraisal team consensus must be reached on the preliminary findings before they are provided to the appraised organization for validation.

Preliminary findings must be corroborated via multiple practice implementation indicator types (direct, indirect, affirmation). The appraisal team should request additional information in areas where the inventory of objective evidence is insufficient. Preliminary findings must not refer to specific individuals, units, or organizational sub-units.

Every model practice characterized as either not implemented or partially implemented, at the appraised organization level, must have at least one preliminary finding associated with it.

All practices will have observations which can become findings, whether a strength or weakness. Significant strengths will later be summarized by goal (i.e., the goal will be stated directly from People CMM for the PA, and findings will include a bulleted summary of significant strengths).

At least one representative from each unit and from any associated staff functions must participate in the set of validation activities. Only appraisal participants may participate (i.e., only people who provided data may participate in validation).

Legal representatives for the organization must review the draft findings to ensure there is no breach of confidentiality or potential issues between management and the workforce.

A minimum of one validation session is required, and no more than five are recommended—although no maximum limit is specified. Three sessions is most common. The rules of confidentiality and the expected use of appraisal data must be communicated to participants in each validation activity.

**Optional Practices**—Preliminary findings (and other appraisal results) focused on specific projects, divisions, or other organizational sub-units might be generated if they are reflected in the appraisal objectives and constraints. This tailoring option also requires that the members of the organization participating in the appraisal be fully informed of the intended use of the information they provide to the appraisal team.

Activities performed during this task ensure that the final findings presentation does not have unrealized legal implications. The appraisal team reviews the preliminary findings briefing

with the legal counsel or a representative of the legal unit of the assessed organization. This review ensures that the appraisal team does not present material that would adversely affect legal actions or grievances pending in the organization. The intent of this review is not to have the legal unit sanitize the findings or alter them in any arbitrary way. However, since the findings represent documented information that could be brought into future legal proceedings (discoverable information), the legal unit should be aware of them and should have the opportunity to recommend wording. If needed, the appraisal team will revise the preliminary findings briefing before presenting it to process owners. Otherwise, changes requested by the legal unit are made in preparing the final findings briefing.

In addition to the preliminary findings, the legal unit should be briefed on the confidentiality aspects of the appraisal process, including the confidentiality agreements that have been signed by all appraisal team members. Participants at this review should be limited to the relevant legal counsel or legal department staff and the appraisal team. The appraisal sponsor should not attend this review session.

Some of the activities typically performed during this task are listed below.

- Review preliminary findings briefing.
- Record recommended changes and revise preliminary findings briefing, if necessary.

**Implementation Guidance**—Preliminary findings are the building blocks that lead to the judgment of goal satisfaction and form the basis for the final findings. As an intermediate artifact of the appraisal process, preliminary findings are used to ensure traceability between appraisal inputs and appraisal outputs.

Feedback from participants about the preliminary findings should be solicited by the appraisal team and considered for possible revisions to its inventory of objective evidence.

It is not expected that preliminary findings will provide a detailed listing of the implementation status of every model practice in every sampled unit.

Furthermore, it is not expected that the preliminary findings will identify the status of individual units and workgroups with regard to practice implementation or goal achievement. An appraisal sponsor might request these more detailed appraisal results. The appraisal team leader should negotiate for the proper allocation of time to accommodate this tailoring option, and the expectation that such information will be preserved at the end of the appraisal should be made clear to all appraisal participants.

Practice feedback will be provided, with strengths summarized at the goal level in a bulleted list. Weaknesses are written as separate findings for each practice within the goal that has a noted weakness.

**Implementation Guidance: Preliminary Findings Presentations**—An interactive presentation is the most effective mechanism for validating the preliminary findings. The members of the organization who provided data to the appraisal team are typically brought

together in a conference room, and a slide presentation is used to review the preliminary findings in an effort to invite people to provide additional data or express their agreement with the summary statements. The audience is often grouped by seniority in the organization, and separate presentations are made for workforce, process owners, and managers.

During the presentation, one or more members of the team review the preliminary findings statements and provide the audience with an opportunity to comment or ask questions. The presenter uses only the words crafted by the appraisal team and avoids elaborating on the findings using his or her own words. When questions are asked about a preliminary finding, the team leader provides any clarification needed. However, team members should avoid the appearance that they are justifying the content of the statement.

The detailed data that led to the preliminary findings must be protected, and there is no negotiation for rewording or eliminating findings. The appraisal team must record new data made available to them without commenting on how the data might be interpreted or how the findings might need to change.

**Implementation Guidance: Survey Instrument**—Finally, a survey instrument can be used in addition (or as an alternative) to the techniques above. A carefully worded instrument that asks respondents to rate their level of agreement with the finding statement and provides an opportunity for written feedback can provide a low-cost and timely source of data for the team.

## 2.2.3 Document Objective Evidence

**Purpose**—Transforming the data into lasting records that document practice implementation and strengths and weaknesses.

**Entry Criteria**—Planning activities for the appraisal are complete, including the selection and preparation of the appraisal team. At least one data collection activity has been conducted, and appraisal-relevant data are available to record.

**Inputs**—Appraisal data, including the following:

- notes taken during data collection activities (if applicable)
- annotated worksheets or other work aids containing data (if applicable)
- strengths and weaknesses documented from previous activities
- data collection plan

**Activities**—The four activities listed below are required for this process.

2.2.3.1 Take/Review/Tag Notes

2.2.3.2 Record Presence/Absence of Objective Evidence

2.2.3.3 Document Practice Implementation Gaps

2.2.3.4 Review and Update the Data Collection Plan

## Outputs

- updated appraisal data, including the following:
  - noted practice implementation gaps (if any)
  - revised data collection plan (if applicable)
  - annotated worksheets
- requests for additional data (interviewees or documents)

**Outcome**—Individual team members understand the data collected thus far and have information to guide any needed subsequent data collection.

**Exit Criteria**—All data from the most recent data collection session has been captured as a new baseline of practice implementation evidence or strength and weakness statements. The data-gathering plans have been updated to reflect the need for additional information and topics that can be removed from active investigation.

**Key Points**—This process has traditionally been the most difficult one to manage during an appraisal. Members of the team will vary a great deal in their productivity and style of work. The team leader must be very attentive to the progress of each team member and take effective corrective actions to ensure team progress.

**Tools and Techniques**—Because of the challenging nature of this activity, Lead Appraisers often have strong preferences for tools and techniques they have found to be successful. Some high-level tools and techniques that have been effective for others effective include the following:

- work aids such as wall charts, spreadsheet programs, and automated database tools to help track the status of data collection
- mini-teams, where pairs (or triplets) of team members are assigned specific PAs
- explicit review of the effort spent, in real time. Time management is a critical skill for this activity.
- a variety of techniques for structuring team notebooks and formats for recording notes
- team norms regarding techniques for managing debates and divergent views. (Make explicit well in advance.)

**Metrics**—As mentioned above, tracking the effort expended during this activity (in real time) is a valuable technique. The ability to learn quickly the rate at which each team member works is a skill that experienced Lead Appraisers develop using effort and duration metrics.

Metrics are captured during the appraisal.

**Verification and Validation**—The method rules for recording traceability and validating data contribute significantly to the verification and validation of the appraisal data. The role of the appraisal team leader in monitoring progress and the consensus decision making process also serve as important verification and validation activities.

**Records**—All appraisal data are recorded with full traceability to information sources and the model components to which they pertain. The full detail in this traceability contains sensitive information that should not be provided to people outside of the appraisal team. Data must never be attributed to individuals or groups even if some of the detailed data are provided to the engineering process group for use in process improvement.

All appraisal data are recorded in the process area workbook.

**Tailoring**—The use of a specialized appraisal data management tool is common in this activity.

**Interfaces with Other Processes**—The mechanics associated with recording and transcribing objective evidence are described in this section. There are many links between these mechanics and the data collection process, as well as the data verification and validation process. It is important to understand that the data-recording process must support these other processes and that the tools used during an appraisal will need to accommodate these linkages. Typically, an integrated database tool is used to manage all appraisal data that result from the analysis of notes taken during data collection.

**Summary of Activities**—The notes taken by individual team members provide the most basic representation of appraisal data. These notes are reviewed and tagged or otherwise processed before their information content is transformed into lasting representations. The presence, absence, and/or appropriateness of objective evidence is judged and recorded based on the data collected. The scheme by which this set of records is produced is an important implementation choice made by the appraisal team leader and must be well understood by the team. Gaps in the implemented practices are also recorded in a consistent manner to ensure traceability. Finally, the data collection plan must be reviewed in light of changes in the set of data available to the team and the remaining data needed to support reliable rating judgments.

### 2.2.3.1 Take/Review/Tag Notes

**Activity Description**—As team members examine data sources, they document *what* the objective evidence is (referencing documents, presentations, instruments, and interviewee comments), as well as *why* or *how* the objective evidence meets the intent of the model practice.

In some cases, team members record data directly in the objective evidence tracking tool instead of taking notes on paper or in their notebooks that describe the objective evidence.

For all interviews and presentations, the team members *must* take notes that capture the objective evidence before they move to the annotation of the objective evidence tracking tool.

#### Required Practices

- Record notes obtained from objective evidence data-gathering sessions.
- Relate notes to corresponding practices in the appraisal reference model.

All required practices performance decisions are captured in the appraisal plan.

**Parameters and Limits**—Every team member present must take notes during interviews and presentations. These notes must cover all areas investigated during the interview and are not limited to the PAs assigned to the individual team member (i.e., everybody takes notes on everything).

During document reviews and the review of instruments, notes must be taken to preserve specific context or focused references if the rationale for accepting the objective evidence is not self-evident.

Whenever notes are taken in a data-gathering session, individual team members should review their notes immediately after the conclusion of the session and tag significant items that relate to one or more model practices. This review and tagging process must occur within 24 hours of the data-gathering session.

**Optional Practices**—Tagging schemes that show traceability to model practices and techniques for highlighting phrases are determined by the preferences of the note taker. A variety of formats has been devised for team member notebooks to facilitate note taking and tracking raw data during appraisals. Frequently, the questions used during an interview are printed and collated in a team member notebook that contains note-taking forms and other useful information such as interview schedules and document lists.

Notes can be recorded for items that have significant positive or negative impact on the enactment of processes within the appraised organization, even if they are not directly related to model practices. These might ultimately be reflected in non-model findings reported to the appraised organization.

**Implementation Guidance**—The raw notes taken during an appraisal are treated as confidential information and may not be provided to any person outside of the appraisal team. Team members are required to destroy their notes in a secure manner at the conclusion of the appraisal. This ensures that the attribution of detailed information to individuals in the organization cannot lead to inappropriate consequences following the appraisal.

**Implementation Guidance: Taking Notes**—Team members actively take notes during all data-gathering sessions. The purpose is to record verbatim what the information source reveals about the implementation of practices in the unit or organization. Note-taking is done for all types of objective evidence.

The analysis of instruments yields information and references regarding the implementation of practices, ideally with traceability to the model. While reviewing documents, note specific phrases or references, and record the document name and page number. When receiving presentations, phrases or references provided as elaboration are captured in notes. Interviews are the most intensive activity. The purpose is to record what the interviewees said, not what the team member believes they meant.

**Implementation Guidance: Reviewing Notes**—The context in which the data are provided—be it during an interview, presentation, or in a document—affects the proper interpretation of the facts. For example, notes taken during an interview are based on a give and take between the interviewer and the interviewee. The threads of discussion often provide a context that might not be reflected in a single excerpt from the middle of the interview. Note takers should review their work to ensure that such contextual information can be preserved in their recollection, and preferably in the annotation of their notes.

**Implementation Guidance: Tagging Notes**—As notes are reviewed, team members often use highlighter pens or annotation schemes to identify the most salient excerpts. The PA and/or practice to which the information applies might be written in colored ink over the raw notes. All notes should identify the data-gathering session, and the pages should be numbered to preserve the sequence of information. For notes taken during interviews, it is often very useful to draw a seating chart to show where each person was sitting during the interview. Scripts prepared in advance of scheduled interviews can be tagged to help relate responses to appropriate sections of the reference model. Some interviewee responses might deal with model practices other than those targeted by a given question, which would necessitate additional tagging.

### **2.2.3.2 Record Presence/Absence of Objective Evidence**

**Activity Description**—The presence or absence of appropriate objective evidence for each model practice in the scope of the appraisal is determined based on information obtained from data-gathering sessions. Annotations are made to indicate the source, relevance, and coverage of objective evidence collected. If the data source does not make it obvious *why* the objective evidence is appropriate, a comment can be added to the annotation. For example, when an alternative training approach is used, it might be necessary to document why that alternative meets the intent of the model practice. Adding comments to the annotations can help avoid rehashing the rationale for accepting the objective evidence during team discussions.

**Required Practices**—Record the presence or absence of appropriate objective evidence collected for each reference model practice.

The availability of objective evidence is captured in the process area workbook tracking tool.

**Parameters and Limits**—The inventory of objective evidence (in electronic or paper form) is updated to reflect what the data imply about the implementation of particular practices. Throughout the appraisal conduct, annotations indicating the presence or absence of objective evidence are made for every practice within the model scope of the appraisal. The annotation scheme used must ensure that the record reveals the following information:

- the unit or appraised organization to which the data apply
- the practice to which the data apply
- the type of objective evidence being recorded (i.e., direct, indirect, or affirmation)

- whether the data imply the presence or absence of the objective evidence
- whether the data suggest that the objective evidence is appropriate
- comments about the appropriateness of the evidence (if needed)
- whether or not additional information is needed before the team can characterize the extent to which the practice is implemented
- a description of what the evidence is, if such a description was not provided by the organization in advance

All evidence is captured in the process area workbook.

**Optional Practices**—Following each verification session where the presence or absence of objective evidence is recorded, the team reviews the judgments about each new piece of objective evidence. This can be useful in establishing a common understanding of the expectations for objective evidence, especially early in the appraisal.

**Implementation Guidance**—This activity represents the mechanical aspects of processing appraisal data and is strongly tied to the activities described in process 2.2.2 Verify and Validate Objective Evidence. It emphasizes the steps needed to update the inventory of objective evidence and maintain traceability to data sources, while process 2.2.2 emphasizes the interpretation of the data collected and the sufficiency of objective evidence relative to the appraisal reference model.

Team members typically record the presence or absence of appropriate objective evidence with tools such as tracking tables or data consolidation worksheets. Prior to the assignment of goal ratings, the entire team reviews the status of the objective evidence as reflected in the annotations made by each team member.

The data gathered during every data collection session should be related to the practices in use in a unit or across the organization. In recording the presence or absence of objective evidence, the intent is to inventory quickly the composite of factual information. Elaboration about the meaning of data or how they relate to other important issues is captured either in notes or in the descriptions of practice implementation gaps crafted by team members.

### 2.2.3.3 Document Practice Implementation Gaps

**Activity Description**—The primary intent of this activity is to derive summary prose statements that describe the gap between the objective evidence and what the team was looking for to support a claim that the model practice was implemented. The statements explain why the practice is not considered to be fully implemented. Statements of practice implementation gaps will be validated with the appraised organization at a later time.

Strengths are not recorded pro forma when practices are found to be fully implemented. Where practices represent exemplary or significant implementations of the model practices, the appraisal team highlights these as part of the appraisal output. However, the primary

focus of this benchmarking method is to help the organization verify the implementation of the model and identify areas where work is needed.

All practices with exemplary or significant strengths or a weakness will have a finding. Findings will later be summarized by goal (i.e., the goal will be stated directly from the People CMM for the PA, and bulleted statements summarizing the practice strengths or weaknesses will be written as a finding).

**Required Practices**—Describe in writing the gaps in the appraised organization's implemented processes relative to reference model practices.

Any gaps are captured in the process area workbook tracking tool.

**Parameters and Limits**—For any practice that is not characterized as fully implemented, there must be a prose statement explaining the gap between what the organization does and what the model expects.

Regardless of the medium used, statements describing practice implementation gaps should be annotated with the following identifying information:

- the model component to which the statement relates (i.e., PA, goal, or practice)
- the data collection session(s) in which the information was uncovered
- the process instantiation(s) to which the statement applies. Prose statements of practice implementation gaps presented to the appraised organization in the form of preliminary findings for validation must be free of references to specific individuals or units.

**Optional Practices**—Document strengths in the implementation of model practices when the team discovers exemplary or significant implementations. Label implementation gaps as "opportunities for improvement" to avoid the potentially negative connotations of labeling them as weaknesses.

Document any significant issues impeding performance in the organization even if they do not map to the People CMM model. This must be done cautiously, and the number of these issues should not be greater than the number of model-related issues reported by the team.

**Implementation Guidance**—The database used to record the inventory of objective evidence may also be used to record practice implementation gaps and strengths, or a separate location or tool may be used. Gaps in practice implementation should be recorded at the level of a particular instance of a model practice. These precursors to preliminary findings are more detailed and pointed, while all information presented outside of the team is aggregated to the goal and appraised-organization-level of abstraction.

Try to write observations as closely as possible to what a final finding would look like. This is good practice, but not a method requirement.

Strengths are only documented if the implementation of a practice is exceptional or significant and reflects a strong asset in the process in use. An adequate implementation of a model practice is not necessarily a strength. Team members should use their collective experience and judgment to determine whether or not they have uncovered an exemplary to highlight in the appraisal output. Gaps in practice implementation are documented if the objective evidence indicates a missing component in the process or an inappropriate practice in light of the value the practice is expected to add to the achievement of the goal. That is, practices that fail to help the organization meet the People CMM goal to which they relate should have a gap documented that explains why the goal is not met.

All practices might have a finding, whether a strength or weakness. Findings will later be summarized by goal (i.e., the goal will be stated directly from People CMM for the PA, and bulleted statements summarizing the practice strengths and weaknesses will be written as a finding).

#### **2.2.3.4 Review and Update the Data Collection Plan**

**Activity Description**—This activity is used to continuously monitor the state of available objective evidence and to select the next tactic in the pursuit of obtaining full coverage of the model and the appraised organization.

##### **Required Practices**

- Review the objective evidence collected and the data collection plan to determine what additional objective evidence is still needed for sufficient coverage of the model scope.
- Revise the data collection plan to obtain additional objective evidence if data is not sufficient to judge the implementation of reference model practices.
- Identify priorities for the upcoming data collection events and reevaluate the feasibility of the schedule in light of the current state of the objective evidence.

The availability of any additional required objective evidence is captured in the process area workbook tracking tool.

**Parameters and Limits**—This activity must be enacted at least once a day, and a consolidated summary of the appraisal data collection status must be available to the team at the start of each day during which data collection events are planned.

**Optional Practices**—In addition to the daily status mentioned above, more frequent status checks may be conducted. These interim status checks are not aggregated for a team-wide view of status unless the appraisal team leader finds that beneficial.

**Implementation Guidance**—The data collection status summarizes the differences between the objective evidence on hand and the evidence needed to support the creation of appraisal outputs (e.g., ratings). Annotations regarding the presence and appropriateness of objective evidence allow the team to inventory the state of the knowledge base. This status then drives

requirements for the collection of more data, which must be met by the data collection plan. The annotation of the inventory of objective evidence is described in process 2.2.2 Verify and Validate Objective Evidence.

The plan for future data collection should be revisited and updated as necessary. There might be several situations in which additional data are required for the team to sufficiently characterize the implementation of reference model practices. Some examples of these situations are listed below.

- The process of reconciling new data with old might identify conflicts or ambiguities in the data that require clarification.
- The search for objective evidence from previous appraisals or mini-appraisals might lead to the discovery of one or more previously undocumented practice(s) in the organization.
- Attempts to confirm the use of a particular practice or tool in a unit might have been unsuccessful.

Prioritizing data needs and allocating data collection effort are ongoing activities that the appraisal team leader oversees. The data collection status summary might be performed by the appraisal team leader and reported to the team members, or the appraisal team leader might elect to have each mini-team perform this activity for its assigned PAs.

Specific information needed to resolve ambiguities or conflicts in the existing data should be documented for follow-up by one or more members of the team. For detailed data items that have a limited scope of impact, the notes of individual team members might be adequate to document the data needed. For example, whether or not a particular person is involved in a meeting or reviews a given document can be confirmed by a question asked during an on-call interview. Therefore, a note made by an individual team member to make sure the question is asked might suffice. In contrast, if conflicting information is uncovered about whether or not a given event occurred (such as a meeting) more visibility for this conflict might be needed among the team members to understand why the information collected thus far is not consistent. In such a case, the person(s) responsible for the PA where that practice resides might need to alert the team to the conflicting data and facilitate a team discussion to seek clarity and additional data. This could lead to the crafting of a specific interview question to be used in standard interviews.

The data collection plan and inventory of objective evidence allows the appraisal team to continuously monitor progress toward sufficient coverage of reference model practices in preparation for rating. Estimates of the additional data collection effort should be reviewed regularly. If the feasibility of the appraisal schedule is called into question, a replanning effort might be necessary (as described in activity 2.1.5.3 Replan Data Collection).

## **2.2.4 Generate Appraisal Results**

**Purpose**—Rate goal satisfaction based on the extent of practice implementation throughout the appraised organization. The extent of practice implementation is judged based on

validated data (e.g., direct, indirect, and affirmation objective evidence) collected from the entire representative sample of the appraised organization. The rating of maturity levels is driven by the goal satisfaction ratings.

**Entry Criteria**—The set of validated preliminary findings, statements of practice implementation gaps, and/or tabulations of validated objective evidence of practice implementation on which they are based are available. Team members are confident that they have obtained all the data they will need to make rating judgments. The data obtained completely covers the practices within the defined People CMM model scope and the entire representative sample selected for the appraised organization.

**Inputs**—Appraisal data, including the following:

- validated preliminary findings
- tabulations of objective evidence of practice implementation
- annotated worksheets, checklists, and working notes

**Activities**—The four activities listed below are required for this process.

2.2.4.1 Derive Findings and Rate Goals

2.2.4.2 Determine Satisfaction of Process Areas

2.2.4.3 Determine Maturity Level

2.2.4.4 Document Appraisal Results

### **Outputs**

- final findings
- recorded rating decisions

**Outcome**—A formal rating decision is needed for each reference model component to be rated, and for which the team obtained complete or sufficient data.

**Exit Criteria**—Ratings against all components per the plan have been made and recorded.

**Key Points**—The judgment of goal satisfaction is based on and traceable to the extent of the implementation of practices associated with that goal (or alternative practices contributing equivalently to goal satisfaction).

Success in this activity is driven by team members' ability to limit their focus to the data that support the judgments and to avoid issues that threaten their ability to be objective. This activity can create a great deal of stress for team members under pressure to help their organization do well. The team leader must skillfully facilitate this activity when external pressures exist.

**Tools and Techniques**—There is a significant amount of data to review in making each round of judgments. Rating worksheets and automated support tools facilitate the team's

decision-making process by presenting necessary data in a concise, well-organized manner. When controversial issues are encountered, the team leader must actively ensure that the team remains focused on the pertinent issues. Strategic rest breaks and sequencing and pacing critical discussions are often keys to success.

### **Metrics**

- planned versus actual effort for each component rated
- number of model components rated satisfied or unsatisfied

Metrics are captured during the appraisal and documented in the appraisal report.

**Verification and Validation**—The team leader verifies that the rating process was performed in accordance with the method rules and the rating baseline selected and documented in the appraisal plan. Work aids used to record the team judgments help ensure traceability to the basis for the rating judgments.

**Records**—A worksheet or other work aid might be used to make a record of the rating decisions.

**Tailoring**—The method provides tailoring options for rating additional model components. The minimum requirement is to rate the goals associated with each PA in the scope of the appraisal. In addition, the sponsor might request that maturity level ratings be performed and reported. Through negotiation between the appraisal team leader and the appraisal sponsor, a decision to rate individual practices can also be made when requested by the sponsor or accepted by the appraisal team as adding value to the final findings.

The characterization of practices (see activity 2.2.2.2 Characterize Implementation of Model Practices) leads to a rating of practices, when done following method requirements.

**Interfaces with Other Processes**—The rating judgments made by the appraisal team members are dependent on the quality of the data available to them and their ability to reliably judge the implementation and institutionalization of practices in the organization that relate to the People CMM model. All the processes previously described contribute to the team's ability to effectively execute this process.

Process 2.1.1 Analyze Requirements establishes the rating baseline, the appraised organization to which ratings will apply, and the purpose for which the ratings will be used. Process 2.1.2 Develop Appraisal Plan, in conjunction with the process 2.1.4 Obtain and Analyze Initial Objective Evidence and process 2.1.5 Prepare for Collection of Objective Evidence, determines the sample of the appraised organization for which data will be collected and the ratings will be determined.

Process 2.1.3 Select and Prepare Team ensures that the team has sufficient knowledge and skills to interpret the data and arrive at sound rating judgments. Processes 2.2.1 Examine Objective Evidence and 2.2.3 Document Objective Evidence provide the basic information

needed to support making the judgments. Process 2.2.2 Verify and Validate Objective Evidence characterizes the extent to which the organization implements practices in the model (or acceptable alternatives) and validates findings describing associated weaknesses. Upon the successful execution of these processes, the team is ready to rate the satisfaction of goals dependent on those practices.

**Summary of Activities**—The required rating activity involves making team judgments about goal satisfaction for each and every goal within the model scope defined in the rating baseline. Once goal satisfaction has been determined, optional rating activities can be performed in accordance with the defined rating baseline and the model. The first optional activity focuses on rolling up goal satisfaction to PA ratings. The team assigns a maturity level rating (1 through 5) corresponding to the highest level in the model for which all applicable PAs have been rated as satisfied.

#### **2.2.4.1 Derive Findings and Rate Goals**

**Activity Description**—The judgments made about goal satisfaction are driven by the findings that were documented by the appraisal team and validated by appraisal participants. The preliminary findings focus on gaps in the implementation of practices. When performing goal ratings, the team must judge whether or not these gaps in the implementation of practices (in aggregate) threaten the organization's ability to satisfy the goals associated with the practices.

##### **Required Practices**

- Derive final findings using preliminary findings statements, feedback from validation activities, and any additional objective evidence collected as a result of the validation activity.
- Rate each goal within the reference model scope of the appraisal based on the practice implementation characterizations at the appraised organization level and the aggregation of weaknesses associated with that goal.
- Obtain appraisal team consensus on the practice implementation characterizations, findings statements, and ratings generated for the appraised organization level.

**Parameters and Limits**—When deriving final findings, the aim is to create goal-level statements that summarize the gaps in practice implementation. These statements must be abstracted to the level of the appraised organization and cannot focus on individual units, unless the tailoring option for unit-specific findings has been agreed upon during planning.

If there are no findings that document the weaknesses associated with a goal, the goal must be satisfied. The goal is rated satisfied if both of the following occur:

- All associated practices are characterized at the appraised organization level as either largely implemented or fully implemented.

- The aggregation of weaknesses associated with the goal does not have a significant negative impact on goal achievement.

For a goal to be rated as unsatisfied, the team must be able to describe how the set of weaknesses (or single weakness) led to this rating.

**Optional Practices**—Findings statements and satisfaction ratings may be specified at the level of individual practices if the appraisal sponsor specifically requests this tailoring option. These practice-level ratings must be based on the extent to which the implemented practice (or the absence of implementation) supports the achievement of the related goal. The use of informative material to form a checklist is explicitly discouraged since it might cloud discovery of valid information in the organization. A rating algorithm for practices that does not have a demonstrable link to PA goals would depart from the intended use of People CMM components.

**Implementation Guidance**—Any endeavor that results in a score, grade, or rating is by definition an area of sensitivity to those affected by the outcome. An objective and clear-cut basis for assigning a rating lessens this sensitivity and results in a more consistent basis of comparison among the appraised organizations and goals rated. Judgments made prior to and during the rating process should be based on observable facts and should be made at the lowest level of abstraction that makes sense. In the case of People CMM, the lowest level of abstraction is characterizing the extent of practice implementation for each process instantiation within the representative sample. Characterizations made at the instantiation level are aggregated into a characterization of the extent of practice implementation throughout the organization, as described earlier in process 2.2.2 Verify and Validate Objective Evidence. The judgment of goal satisfaction is then based on and directly traceable to the extent of implementation of practices associated with that goal (or alternative practices contributing equivalently to goal satisfaction).

Findings should be phrased in terms that help the appraisal sponsor make decisions and take action based on the appraisal results.

Final findings are best evolved from the evidence and statements of strengths or weaknesses captured in the process area workbook tracking tool. Where possible, characterize each practice to make the goal rating more evident.

#### **2.2.4.2 Determine Satisfaction of Process Areas**

**Activity Description**—When using the People CMM model, the team may derive the satisfaction of PAs from the set of goal satisfaction judgments. Assigning PA satisfaction ratings is an optional activity, selected at the discretion of the appraisal sponsor and documented in the appraisal input.

**Required Practices**—Rate the satisfaction of each PA in the scope of the appraisal based on the ratings of the goals within each PA, if this rating option was selected during planning.

All ratings are captured in the process area workbook tracking tool.

**Parameters and Limits**—PAs might be assigned rating values of satisfied, unsatisfied, not applicable, or not rated.

A PA is rated satisfied if, and only if, all of its goals are rated satisfied. If even one of the goals in a PA is rated unsatisfied, then the PA is rated unsatisfied. When a PA is determined to be outside of the appraised organization's scope of work, the PA is designated not applicable and is not rated. The identification of a PA as not applicable must occur during the planning of the appraisal.

When a PA is outside of the appraisal scope, or if the associated set of objective evidence does not meet the defined criteria for sufficient data coverage, the PA is not rated and designated as such. The criteria for sufficient data coverage are described in activity 2.2.2.1 Verify Objective Evidence.

**Optional Practices**—A profile to summarize the satisfaction of goals might be created to provide further insight about the rating outcomes. Where a PA is rated as unsatisfied, this more detailed view of the rating outcomes might provide focus and visibility at a lower level of detail.

**Implementation Guidance**—PA satisfaction is a direct function of goal satisfaction. A PA is rated as satisfied if every goal contained in the PA is rated as satisfied. A PA is rated as unsatisfied if any goal is rated as unsatisfied. This ensures that one or more weaknesses exist that serve to explain why the goal, and therefore the PA, is not satisfied.

PA ratings need not be reported to appraisal participants if the sponsor does not wish to disclose them. However, a documented output from this rating activity, if it is performed, is a required component in the appraisal record.

### 2.2.4.3 Determine Maturity Level

**Activity Description**—Historically, one of the most visible outcomes of an appraisal has been the maturity level rating assigned. The determination of a maturity level rating is straightforward and derived mechanically from the ratings assigned at the lower levels. Assigning a maturity level rating for Class A appraisals is an optional activity selected at the discretion of the appraisal sponsor and documented in the appraisal input.

**Required Practices**—Rate the maturity level based on the ratings assigned to PAs, if this rating option was selected during planning.

All ratings are captured in the process area workbook tracking tool.

**Parameters and Limits**—The maturity level determined is the highest level at which all PAs contained within the maturity level and all lower maturity levels are rated as satisfied or not applicable.

**Optional Practices**—None.

**Implementation Guidance**—This activity may be omitted since it is a tailoring option. If a maturity level is to be reported, the PA ratings that form the basis for the maturity level rating are derived as described in activity 2.2.4.2 Determine Satisfaction of Process Areas.

#### **2.2.4.4 Document Appraisal Results**

**Activity Description**—The results of the appraisal conduct must be documented for reporting. Verbal reports of the rating outcomes or face-to-face explanations of implementation gaps discovered by the team are not sufficient to communicate appraisal results.

##### **Required Practices**

- Document the final findings.
- Document the rating outcome(s).
- Document the appraisal disclosure statement (ADS).

**Parameters and Limits**—The ADS and the set of appraisal outputs agreed upon with the appraisal sponsor must be documented. These appraisal outputs might exclude all ratings, and the sponsor is free to select and disclose a variety of appraisal outcomes (as specified in the activities of this process).

Regardless of the needs of the sponsor, the ADS, goal ratings, and associated findings must be documented as a part of the appraisal information returned to the People CMM Steward.

**Optional Practices**—Any optional outputs requested by the appraisal sponsor are also created during this activity.

**Implementation Guidance**—This activity is focused on collecting and documenting the results of prior activities related to the generation of findings and ratings. Depending on the planned recipients of the results, multiple forms of the results might be needed. Certain data might not be appropriate for all audiences, or the style or language of the results might need to be adjusted to best fit the needs of the recipients.

The documented appraisal results are typically provided in a final findings presentation, described in activity 2.3.1.1 Present Final Findings.

The final findings can be developed directly from the process area workbook tracking tool.

## **2.3 Phase 3**

This phase has two processes: Deliver Appraisal Results, and Package and Archive Appraisal Assets.

### 2.3.1 Deliver Appraisal Results

**Purpose**—Provide credible appraisal results that can be used to guide actions. Represent the strengths and weaknesses of the processes in use at the time. Provide ratings (if planned for) that accurately reflect the maturity level of the processes in use.

#### Entry Criteria

- Objective evidence has been validated through the team process.
- Preliminary findings have been validated.
- Ratings have been determined (for model components selected for rating).
- Final findings have been created and reviewed by the team.

#### Inputs

- appraisal data
  - final findings
  - ratings
- appraisal artifacts
  - appraisal input
  - appraisal plan

**Activities**—The three activities listed below are required for this process.

2.3.1.1 Present Final Findings

2.3.1.2 Conduct Executive Session(s)

2.3.1.3 Plan for Next Steps

#### Outputs

- documented final findings
- final report (if requested)
- recommendations report (if requested)

#### Outcome

- The results of the appraisal are provided to the sponsor and the appraised organization.
- A valid and reliable characterization of the current state of the processes in use across the appraised organization is documented.

#### Exit Criteria

- Appraisal results are delivered to the appraisal sponsor and appraised organization.
- An executive session is conducted, if appropriate.

**Key Points**—The appraisal results are intended to support decision making and need to be delivered in a way that promotes appropriate actions. Whether the appraisal was conducted

for internal process improvement or process monitoring purposes, the delivery of results should facilitate the actions that are driven by the information.

**Tools and Techniques**—Templates containing standard information for use in a final findings briefing are provided to all SCAMPI with People CMM Lead Appraisers. Experienced appraisers frequently use electronic (database) tools that support the transformation of raw appraisal data into appraisal results. These tools might be useful in real time as appraisal results are presented. Strategies for presenting and packaging the results should leverage presentation and documentation techniques that best suit the audience.

**Metrics**—It is highly recommended that the attendance at the final briefing (if one is held) be recorded. Significant absenteeism of key stakeholders is likely to be an indication of risk for future success in addressing the appraisal findings.

Metrics are captured at the meeting and documented in the ADS.

**Verification and Validation**—The required elements of appraisal results are specified in the activity description, and a checklist helps verify that these elements are present. Validation of this activity can only occur after the appraisal is complete.

## **Records**

- final findings
- final report (if requested)
- recommendations report, if required by sponsor

**Tailoring**—In some internal process improvement usage of the method, the executive session might be tailored out. The appraisal sponsor should make this decision with the full involvement of the appraisal team leader.

**Interfaces with Other Processes**—Upon completion of process 2.2.4 Generate Appraisal Results, the ratings and findings generated are used to prepare and deliver the final appraisal results to the appraisal sponsor and appraised organization. The appraisal results become part of the appraisal record, which is discussed in process 2.3.2 Package and Archive Appraisal Assets.

**Summary of Activities**—The final findings contain the validated strengths, weaknesses, and ratings (as defined by the appraisal plan) reflecting the organizational process maturity level for PAs within the appraisal scope. Other appraisal outputs, as requested by the appraisal sponsor and documented in the appraisal plan, are generated and provided. Optionally, a separate executive session might also be held to clarify and discuss the appraisal results from a senior management perspective to facilitate decision making. Plans are established for acting on the appraisal results.

### 2.3.1.1 Present Final Findings

**Activity Description**—The final findings contain a summary of the strengths and weaknesses for each PA within the appraisal scope, as well as additional information that provides context for the findings. The generation of the findings is addressed in activity 2.2.4.1 Derive Findings and Rate Goals. The presentation to the appraisal sponsor and appraised organization might be in a summarized form with the detailed findings provided as backup information. Final findings are often presented using view graphs in a meeting room or auditorium.

In addition to the final findings, a draft ADS summarizing the results of the appraisal is provided to the appraisal sponsor.

#### **Required Practices**

- Provide appraisal final findings to the appraisal sponsor and the appraised organization.
- Provide an ADS to the appraisal sponsor summarizing the appraisal results and conditions under which the appraisal was performed.

**Parameters and Limits**—Required elements of the final findings include the following:

- summary of the appraisal process
- findings (summary of strengths and weaknesses)

Appraisal team consensus must be obtained on the wording of the final findings to ensure that the whole team supports the accuracy of the described appraisal results.

The team, when delivering the final findings, must adhere to some important principles, listed below.

- If a model component is reported as unsatisfied, the corresponding findings of weaknesses that caused the team to make that judgment must also be reported.
- Confidentiality and non-attribution principles apply to statements made in the presentation of final findings.

The ADS is a summary statement describing the appraisal results that includes the conditions and constraints under which the appraisal was performed. It contains information considered essential to adequately interpret the meaning of assigned maturity level ratings. The ADS is prepared by the appraisal team leader and provided to the appraisal sponsor. Otherwise, the appraisal team leader delivers the ADS to the sponsor as a separate document.

A detailed description of the ADS contents is provided in Appendix A. The ADS is considered a draft at this stage of the appraisal process. The ADS must also contain an affirmation that all appraisal requirements have been satisfied, which cannot be claimed until all appraisal activities are complete.

**Optional Practices**—Optional elements of the final findings report include the following:

- ratings
- improvement activities
- recommended actions, if requested by the sponsor
- schedule of major upcoming events (e.g., appraisal report, recommendations, action plan, reappraisal), if required

Note that the generation of goal ratings by the appraisal team is required (as described in process 2.2.4 Generate Appraisal Results). However, these ratings may be excluded from the final findings at the discretion of the appraisal sponsor.

A formal presentation of appraisal results by the appraisal team is frequently the final visible activity for appraisals conducted for internal process improvement. The final findings presentation typically is delivered in the form of a face-to-face briefing at the end of the appraisal on-site period.

Other mechanisms for providing the appraisal results to the appraised organization, such as written reports, might be more practical when using the method for process monitoring. Although the timeframe for providing appraisal results might vary, the appraisal cannot be considered complete until the final findings are provided.

The draft ADS may be provided during the executive sessions (if performed), at the conclusion of the final findings briefing, or at some other agreed upon date.

**Implementation Guidance**—The People CMM Steward provides Lead Appraisers with a template for a final findings briefing describing typical contents and format.

Findings include a summary of strengths and weaknesses determined for each PA within the appraisal reference model scope. This might also include global findings that apply across multiple PAs and non-reference model findings that affect the implementation (positively or negatively) of associated processes within the appraised organization.

Normally, the appraisal team leader presents the final findings. In some applications of the method for internal process improvement, the team might elect to have an appraisal team member or members from the appraised organization provide the briefing to encourage the acceptance of the final findings and ownership of the appraisal results for follow-on action. The latter is a preferred approach if the ATL does not work in the appraised organization but the appraisal team members do.

As a courtesy, the appraisal team can inform the appraisal sponsor and/or the senior site manager of the appraisal results prior to presenting them publicly in the final findings briefing. This might help them to avoid surprises and obtain feedback on ways to present the findings that best meet the needs of the sponsor, appraisal participants, and the appraised organization. See activity 2.3.1.2 Conduct Executive Session(s) for a description of topics for discussion.

The number and scope of findings reported will affect the impact of appraisal results, whether or not the team intends for this to happen. There are times when providing a long list of details is beneficial. Other times, high-level summaries are more appropriate.

### **2.3.1.2 Conduct Executive Session(s)**

**Activity Description**—The executive session is an optional activity that may be performed at the discretion of the appraisal sponsor or senior site manager. The executive session provides the appraisal sponsor, senior site manager, and invited staff with a private opportunity to (a) discuss with the appraisal team leader any issues with the appraisal, (b) obtain clarification of the appraisal results, (c) confirm understanding of the process issues, and (d) provide guidance about the focus, timing, and priorities of the recommendations report and follow-on activities.

**Required Practices**—None. If the option is selected, hold a private meeting between the appraisal team leader and the sponsor, including any participants invited by the sponsor.

The executive session does not have to be held if the sponsor does not require it. The appraisal sponsor should make this decision with the full involvement of the appraisal team leader.

**Parameters and Limits**—If an executive session is conducted, the confidentiality and non-attribution of data sources must be maintained. Multiple sessions may be held if necessary, targeted at the information needs of the executive audience.

**Optional Practices**—Attendance of the entire appraisal team at the executive sessions is a tailoring option. The executive session is also an appropriate opportunity to review appraisal performance with the appraisal sponsor and/or senior site manager, including planned versus actual execution of the appraisal plan, including method tailoring. This provides additional input on the appropriate expectations for interpreting and handling the appraisal results.

The draft ADS can be provided during the executive session instead of at the conclusion of the final findings briefing as discussed in activity 2.3.1.1 Present Final Findings.

**Implementation Guidance**—The executive sessions ensure that the appraisal sponsor and/or the senior site manager have a sound understanding of the appraisal results. Any feedback obtained from these executive sessions should be recorded. All confidentiality and non-attribution rules are still in effect.

### **2.3.1.3 Plan for Next Steps**

**Activity Description**—After the delivery of the appraisal results, a plan for follow-on activities is determined. The planned follow-on activities are typically defined in the appraisal plan, reflecting sponsor requests for additional appraisal tasks and products necessary to meet appraisal objectives or a commitment to take action upon the appraisal results. Follow-on activities might include the following:

- development of a final report
- development of a recommendations report or briefing
- generation or update of a process improvement plan

**Required Practices—None.**

**Parameters and Limits—None.**

**Optional Practices—**Planning for next steps is an optional, but recommended, appraisal activity.

**Implementation Guidance—**Planning for next steps includes optional activities such as the following:

- development of a final report by the appraisal team summarizing the appraisal results for the appraisal sponsor
- submission of appraisal team recommendations for action upon the appraisal findings
- generation of a process improvement action plan for the appraised organization

In addition to specifying the activities to be performed, these plans usually include the assignment of responsibility, schedule, and estimated resources for the implementation of the follow-on actions. The plans established can be used to track the progress of the follow-on activities over time.

**Implementation Guidance: Process Improvement Action Planning—**Findings and recommendations from the appraisal team can be used by the appraised organization to establish action plans for process improvement. This is an optional output most often used in internal process improvement or process-monitoring applications of the appraisal method.

Recommendations often include a prioritized list of improvement activities, such as an improvement plan that defines the tasks, schedules, and resources necessary for implementation.

Follow-on appraisals are usually performed to verify improvement progress. This could include a combination of Class A, B, and C appraisals (refer to the ARC for additional details [SEI 01b]).

**Implementation Guidance: Final Report—**The final report provides details or explanations beyond what was contained in the final findings. The generation of an appraisal final report is an optional activity that, if requested by the appraisal sponsor, documents the execution of the appraisal, contains detailed appraisal findings, and forms a basis for action planning. This baseline is used for subsequent reports and follow-on actions and might also be an input in subsequent appraisals.

Items contained or referenced in the final report, either in their entirety or as a subset, might include the following:

- executive summary of the appraisal process and results
- appraisal input (see process 2.1.1 Analyze Requirements)
- appraisal plan (see process 2.1.2 Develop Appraisal Plan)
- appraisal record (see process 2.3.2 Package and Archive Appraisal Assets)

The final report should be completed as soon as possible after the appraisal, preferably within four weeks. The appraisal team leader usually generates the final report and the other team members contribute. Usually, team members are assigned sections based on their appraisal roles or mini-teams, but the LA is responsible for managing, not generating, the report. Alternately, the team could write the report and the Lead Appraiser review it.

The format and content of the final report varies according to its intended use by the appraisal sponsor. In its simplest form, it could be a set of notes annotated to the final findings, elaborating on some aspect of the findings or capturing essential comments or recommendations from the appraisal team. Or, the final report could be completed with the final findings.

**Implementation Guidance: Recommendations Report**—If requested by the appraisal sponsor, appraisal team recommendations for taking action on the appraisal results can be provided. These recommendations can provide momentum to the appraisal follow-up by serving as a link between the appraisal findings and subsequent decision making or action plans. The emphasis of these recommendations depends on the appraisal sponsor's objectives and planned use of the appraisal results, as defined in the appraisal input. This can vary widely based on the context in which the appraisal method is applied (e.g., internal process improvement, process monitoring).

The recommendations report should be completed as soon as possible after the appraisal on-site period. Depending on the nature, complexity, and use of the recommendations, it might take as long as two months to produce. Rather than generate a separate recommendations report, a common alternative practice is to include these recommendations in the final report.

Consider the possibility that the expertise needed for making the appropriate recommendations might be beyond the level of expertise on the appraisal team.

### 2.3.2 Package and Archive Appraisal Assets

**Purpose**—Preserve important data and records from the appraisal, and dispose of sensitive materials in an appropriate manner.

#### Entry Criteria

- Appraisal has been conducted.
- Results have been delivered to the sponsor.
- All appropriate data have been collected and retained during the appraisal.

## **Inputs**

- appraisal data
  - appraisal input
  - appraisal plan
  - final findings
  - objective evidence
- appraisal team artifacts
  - notes
  - documented practice implementation gaps
  - preliminary findings
  - document library

**Activities**—The four activities listed below are required for this process.

2.3.2.1 Collect Lessons Learned

2.3.2.2 Generate Appraisal Record

2.3.2.3 Provide Appraisal Feedback to People CMM Steward

2.3.2.4 Archive or Dispose of Key Artifacts

## **Outputs**

- appraisal record
- completed forms and checklists
- sanitized data (as appropriate and agreed upon during planning)
- lessons learned for the appraisal team and organization

**Outcome**—Data and artifacts are appropriately archived or destroyed. The team has captured lessons and data to help improve the appraisal process. Requirements for providing appraisal artifacts to stakeholders and the People CMM Steward are met.

## **Exit Criteria**

- Appraisal assets are baselined and archived.
- Required reports are delivered to the appropriate stakeholders.
- Artifacts containing sensitive information are disposed of in an appropriate manner.

**Key Points**—Protect the confidentiality of sensitive data while distributing and archiving appraisal assets. Bundle related information together whenever appropriate.

**Tools and Techniques**—Electronic (database) tools for managing appraisal data provide assistance in ensuring the integrity of baselines and repackaging information for archival purposes. Electronic tools allow the Lead Appraiser to remove traceability information so that data can be provided to the appropriate people while preserving the anonymity of the data sources.

Electronic tools also support the submission of appraisal data to the People CMM Steward. This reduces the administrative burden and facilitates the analysis of appraisal method performance data. These tools also provide feedback to the appraisal community about the consolidated analysis results.

**Metrics**—Although archiving and reporting the metrics associated with the conduct of the appraisal is an important element of this activity, the metrics associated with the conduct of this activity itself are limited. The effort and calendar time consumed are collected and compared to the plan. Some appraisal team leaders will choose to maintain personal metrics associated with the artifacts described in this activity.

**Verification and Validation**—The Lead Appraiser requirements checklist guides the verification of the list of artifacts provided to the People CMM Steward. Validation is provided by the People CMM Steward upon receipt of the appraisal record.

### **Records**

- appraisal record
- lessons learned

**Tailoring**—The usage mode and constraints of the appraisal, as well as the sensitivity of the data and planned use of appraisal results, might greatly affect the degree to which appraisal data is retained, sanitized, or discarded.

**Interfaces with Other Processes**—The final process in the appraisal, this process is about collecting, packaging, and archiving results and artifacts produced by previous processes that must become part of the appraisal record. Most notably, this includes the appraisal input, appraisal plan, and appraisal results.

Additionally, sensitive or proprietary data produced by other appraisal processes must be returned to the appraised organization or destroyed.

**Summary of Activities**—This process includes the data collection, data management, and reporting activities necessary to close out the appraisal. Data collected throughout the appraisal is consolidated and baselined and becomes a permanent part of the appraisal record.

### **2.3.2.1 Collect Lessons Learned**

**Activity Description**—As one of the final activities in wrapping up an appraisal, teams typically record lessons learned from their experience. The purpose of these lessons learned is to document what went right, what went wrong, and suggestions or recommendations for improving the method or its execution.

The collection of lessons learned is a recommended activity for the improvement of future appraisals but is not a method requirement.

**Required Practices**—None.

**Parameters and Limits**—Lessons learned must adhere to the same principles of confidentiality and non-attribution as other appraisal results.

**Optional Practices**—All practices related to the collection of lessons learned are optional but recommended. If the team has identified potential improvements to elements of the People CMM Product Suite, these can be submitted as change requests to the People CMM Steward.

The Lead Assessor should provide feedback to each appraisal team member.

**Implementation Guidance**—Capturing lessons learned is often done as a group at the end of the appraisal while the appraisal activities are fresh in team members' minds. This can be supplemented with additional input from team members upon further reflection, if necessary. Appraisal team leaders forward these aggregate lessons learned to various stakeholders as appropriate, but always to the other team members. Team leaders and members often maintain summary lists of appraisal best practices and lessons learned as a mechanism for continuous learning and improvement, and these are used as a resource for planning subsequent appraisals.

### **2.3.2.2 Generate Appraisal Record**

**Activity Description**—Appraisal data collected throughout the appraisal is aggregated and summarized into a permanent record documenting the appraisal conduct and results. The appraisal record is delivered to the appraisal sponsor for retention.

#### **Required Practices**

- Collect and baseline the appraisal data that becomes part of the permanent records provided to appraisal stakeholders.
- Document the satisfaction of all SCAMPI with People CMM requirements.
- Generate the appraisal record from baselined planning and execution data collected throughout the appraisal.
- Deliver the appraisal record to the appraisal sponsor.

**Parameters and Limits**—Required contents of the appraisal record include the following:

- dates of the appraisal
- appraisal input
- appraisal plan
- objective evidence, or identification thereof, sufficient to substantiate goal-rating judgments
- characterizations of practice implementation determined at the instantiation level and aggregated at the appraised organization level
- identification of the appraisal method (and version) used along with any tailoring options

- final findings
- all ratings rendered during the appraisal (goals, PAs, and maturity)
- ADS

Depending on the recipient and intended usage, appraisal data might be subject to being sanitized or edited in order to comply with rules for non-attribution, confidentiality, protection of proprietary information, and applicable laws, regulations, or standards (e.g., acquisition regulations or security classification). Recipients are expected to place the appropriate limitations on the access and use of the provided appraisal data.

The appraisal team leader documents that all SCAMPI with People CMM requirements were satisfied.

**Optional Practices**—The appraisal record should also contain any additional outputs requested by the appraisal sponsor, as agreed to during appraisal planning and documented in the appraisal input (e.g., reports by unit).

**Implementation Guidance**—The actual objective evidence (artifacts or portions of artifacts) need not be part of the appraisal record, but an identification of the objective evidence is required. This might be implemented by providing the PII's that were used as the basis for characterizing practice implementation decisions.

Guidance on the protection of appraisal data can be summarized based on the recipient of the data as follows:

- appraisal sponsor: replacement of specific sources (persons, units) with non-attributable, general identifiers (e.g., numeric codes assigned to units, roles, or data-gathering sessions)
- People CMM Steward: same as for appraisal sponsor, for data that is shared by both. For data that is provided only to the People CMM Steward, the data collection vehicles (e.g., forms) are already designed to observe non-attribution and confidentiality rules. Additionally, supplied data might be subject to further sanitization to comply with acquisition or security-related restrictions.
- senior site manager: in cases where the appraised organization is separate from the appraisal sponsor, the appraised organization is typically provided only with appraisal results and not data related to planning and decision making or data that makes use of the results.

### 2.3.2.3 Provide Appraisal Feedback to People CMM Steward

**Activity Description**—Appraisal data required by the People CMM Steward is collected and reported. This includes a subset of the contents of the appraisal record, as well other data used by the Steward to aggregate and analyze appraisal performance data for reporting to the community and monitoring the quality of performed appraisals.

**Required Practices**—Submit the completed appraisal report as required by the People CMM Steward.

**Parameters and Limits**—The People CMM Steward defines the specific set of data required for submission at the completion of an appraisal. Submission of the appraisal report is required for the appraisal to be recorded in the steward's database of appraisal results. This is also a requirement established by the steward to maintain Lead Appraiser authorization.

**Optional Practices**—If the objective evidence is available in electronic form, it can be included as part of the appraisal report submitted to the People CMM Steward.

**Implementation Guidance**—The appraisal team leader is responsible for ensuring that appraisal feedback required by the People CMM Steward is collected and reported. The People CMM Steward, as custodian of the product suite and the SEI Appraisal Program, has several objectives in seeking appraisal feedback:

- characterization of the state of the practice in the appraisal community, for the collection and distribution of effective appraisal techniques
- analysis of reported appraisal data to obtain an understanding of appraisal performance for continuous improvement
- quality control within the Appraisal Program, to ensure a high level of confidence in the accuracy of appraisal results

Summarized results determined from appraisal data collected are provided periodically to the community. The format and mechanisms for the submission of this data are established by the People CMM Steward.

#### **2.3.2.4 Archive or Dispose of Key Artifacts**

**Activity Description**—After the various reports are delivered to the appropriate stakeholders and the appraisal assets have been baselined, the team leader is responsible for properly archiving or disposing of the appraisal data, in accordance with agreements made with the sponsor and documented in the appraisal input. The team librarian (if one is used) ensures that all documentation and objective evidence provided by the organization is returned or disposed of properly. Any remaining team artifacts or notes are also disposed of properly.

##### **Required Practices**

- Archive or dispose of key artifacts collected by the appraisal team.
- Return objective evidence provided by the appraised organization.

**Parameters and Limits**—Strict non-attribution policies apply in all usage modes of SCAMPI with People CMM. Confidentiality and non-disclosure agreements established with the appraisal team members remain in effect.

**Optional Practices**—None.

**Implementation Guidance**—How the records are preserved or disposed of depends on the usage mode of the method and the appraisal objectives. Confidentiality rules might differ by application.

Confidentiality of results can be characterized as one of the following:

- known only to the recipient organization
- known to the recipient and sponsor, when they are from different organizations
- known to anyone

The sponsor is solely responsible for determining the confidentiality with which the appraisal results are maintained. The non-attribution of data to specific individuals is the responsibility of the appraisal team. The recipient organization may choose to make the results known outside the organization if the sponsor agrees and this decision is included in the plan. At a high level, this might be done for marketing and public relations reasons. Disclosure of results should include the context and constraints under which the appraisal was performed (e.g., reference model scope, organizational scope), as defined by the ADS described in process 2.3.1 Deliver Appraisal Results.

Any annotations about objective evidence provided to the organization by the appraisal team should be recorded and archived for use in process improvement actions or for reuse in subsequent appraisals.

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## 3 Conclusions

In this pilot, TCS was able to implement a common appraisal method across multiple models and across a large worldwide organization, meeting its original goals.

The interpretation guide presented in Section 2 was used during the four mini-appraisal pilots and the final enterprise Class A appraisal. With pilots, premises are tested and the boundaries of applications are discovered. As a result, the guide was evaluated and updated throughout the process, resulting in a stable interpretation guide used to implement a Class A SCAMPI with People CMM appraisal.

### 3.1 Lessons Learned from the Mini-Appraisals

Some lessons learned during the four mini-appraisal pilots include the following:

1. The SCAMPI method transfers very readily to the People CMM.
2. People CMM has many more practices than CMMI that can only be sufficiently verified at the organization level. Thus the PII's developed for the first pilot needed to better account for this to make the appraisal more efficient. As more information about this bifurcation of practices was learned in the three later mini-appraisals, these PII's continued to evolve.
3. As TCS has many projects at each location, all projects could not be included. A sample demographic representation was taken to ensure that all units were covered sufficiently. People CMM has a three-tier structural view of an organization: (1) the organization itself, (2) units within the organization which are represented by the managers in the organization, and (3) workgroups (or projects) and individuals who are represented as the workforce. While unit representation was assured during the first pilot, many more people were interviewed than might be required for a SCAMPI with CMMI.
4. The organization view is represented through the process owners and others who are responsible at the corporate and center levels above the project level. These individuals can best help the Class A appraisal by being interviewed early in the appraisal to provide the overall organizational process perspectives. This input aids the contextual understanding for the unit and individual interviews to follow.

The process results from the mini-appraisals enabled a better understanding of how to perform the Class A appraisal. For future Class A appraisals, the completion of Class C and/or B appraisals could also be considered to provide understanding before the Class A is performed.

## **3.2 Lessons Learned from the Enterprise Appraisal**

The objective after the four mini-appraisal pilots was to perform an enterprise appraisal across all of TCS. This accounted for approximately 29,000 individuals. This was a large appraisal and was covered over a six and a half month period during 2004. Not all the time was spent in active appraising activities, as the appraisal team was given two-week breaks between major planned activities.

The enterprise appraisal used v0.7 and v0.8 of this document as the base SCAMPI with People CMM definition. This enterprise appraisal, while large, was made easier by the history of TCS with 16 CMM Level 5 and four People CMM Level 4 locations worldwide prior to the start of the mini-appraisals.

The information in this report could serve as an example for other organizations and is fully applicable to any size of SCAMPI appraisal with People CMM. (See Appendix I for additional lessons learned regarding a combined People CMM and CMMI appraisal.) Also as a result of this pilot, the software community can use the knowledge gained from the development of a SCAMPI with People CMM appraisal method.

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## Appendix A Sampling

Sampling is performed when a population is too large or the cost of obtaining information from the full population is too high.

Since the TCS class appraisal was for an organization of more than 29,000 people, sampling was required and was performed for project and interview participants to ensure the following:

- random selection
- representative selection
- non-biased selection

**Random Sampling**—Random selection was used so that any individual in the workforce, manager, or unit would be as likely to be selected as any other.

**Representative Sampling**—The selected sampled subset was demonstrated to be representative of the organization (i.e., the sampling technique did not inadvertently cause a demographic misrepresentation of the organization). For example, a significant unit was not included above any other unit and no age groups were excluded.

**Non-Biased After Selection**—Although the focus was on selecting a random and representative sample, the sample received an independent review (outside of the appraisal team) to ensure that no biases were introduced.

**Selecting Samples**—Samples were selected as close as possible to the time of engagement because a sample selected too early might not have been representative of the organization's views at the time of the appraisal.



## Appendix B 50% Rule

Satisfaction of the 50% rule is a minimum requirement for each goal. Satisfaction of the rule demonstrates coverage of practices and sufficiency of performance across units relevant to the practice. The rule, simply stated, requires that 50% of the process area practices for each goal in each unit in the set of units to be addressed within the appraisal have at least one face-to-face affirmation data point.

This leads to what is sometimes called the “one row-one column” rule. In Figure 1 below, we see that goal X has four related practices. The organization being appraised is a small organization with only four units.

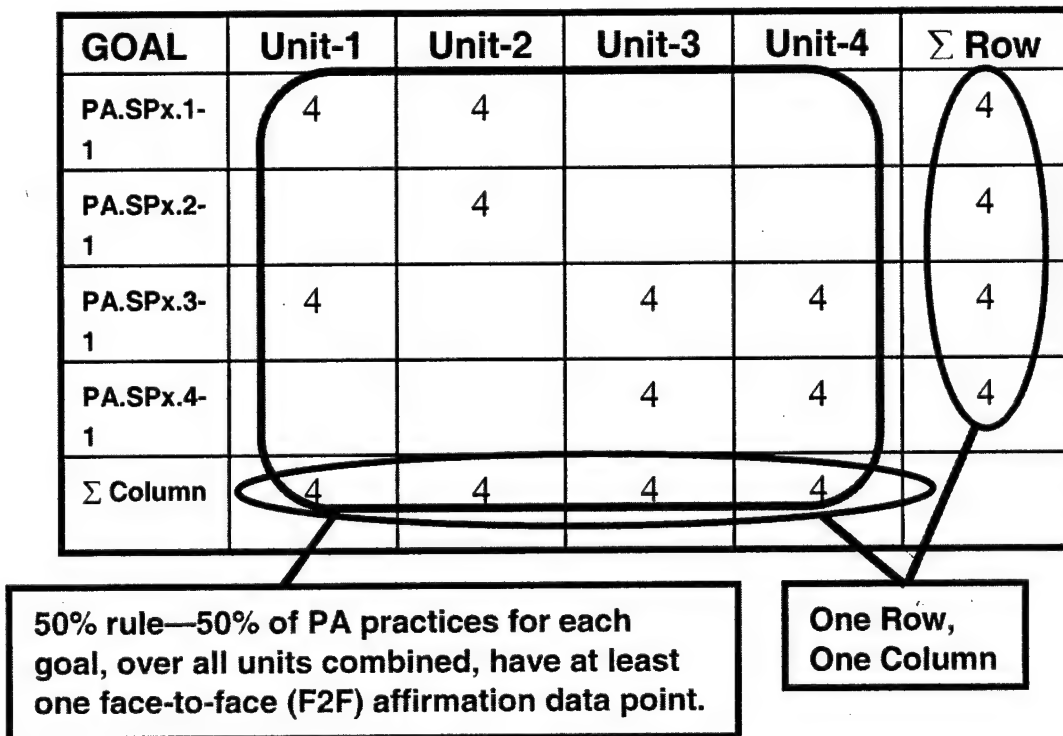


Figure 1: Satisfaction Rules

In this example, according to the 50% rule, each practice must have face-to-face affirmations from at least two units since there are four units in this appraisal.

The one row-one column rule means that for each practice and each unit there will be at least one checkmark in the practice-unit matrix coordinates. This will prevent some units or some practices from having no face-to-face affirmations.

For a small organization, it is easy to view all the columns in Figure 1; however, large, complex organizations require many units, and the matrix can become complicated. A spreadsheet is needed to ensure that data is captured and kept visible to the team during the appraisal. The ATL *must* track face-to face affirmations to make sure they are completed.

The 50% rule and the one row-one column rule are needed to ensure that the appraisal does not become paper focused. Recall that the rules for direct artifacts with indirect artifacts prove corroboration. However, if only these artifacts are used, the reason for getting affirmations from interviews is lost. Thus, with these two rules, the method assures that interviews demonstrate that an organization is performing the model practices.

Some practices are performed at the organization level and some at the unit level. For those performed at the unit level, all units sampled as representative of the organization are included in the measure of the 50% rule. However, when practices are performed at the organization level the rules still apply.

### **How to Score Practices Stated “As Appropriate” in People CMM**

Some practices in the People CMM include words such “as appropriate” or “where appropriate.” For these practices there are three possible situations during the appraisal:

1. There are artifacts and an affirmation stating that the practice is being performed as required by the model. In this case, the “4” is warranted in the unit/practice matrix for the relevant unit and practice.
2. There are no artifacts demonstrating that the practice is being performed as required by the model and/or there is no affirmation stating the practice is being performed. In this case, the “4” is not warranted in the unit/practice matrix for the relevant unit and practice.
3. There are no artifacts demonstrating that the practice is being performed as required by the model and/or there is no affirmation stating the practice is being performed, **and** there is a clear interpretation that the practice is **not appropriate** for the unit. In this case, the “4” is given as an equivalent for scoring purposes only in the unit/practice matrix for the relevant unit and practice, and the practice is not applicable (NA) for this unit.

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## Appendix C Indirect Artifacts

The practice implementation indicators (PIIs) define generic direct and indirect artifacts for each practice in People CMM. Generic PIIs are provided apart from the interpretation guide in Section 2.

Specific direct artifacts were found for all practices during the SCAMPI with People CMM pilot. However, since the People CMM did not intend to have SCAMPI applied when written, it is possible that some practices in some organizations might not have indirect artifacts.

In the TCS mini-appraisals and the enterprise appraisal, direct artifacts were found for each practice. Indirect artifacts were seen for all practices, but not in all entities. Because the greatest focus was on interview evidence, indirect artifacts were not always pursued. While some organizations might not have an indirect artifact for a practice, these instances should be relatively few. As noted in activity 2.1.4.5 Obtain Initial Objective Evidence, some practices might not have indirect artifacts in all organizational implementations of the practice.

Because SCAMPI permits the 50% rule, indirect evidence is required only for 50% of the entities when 50% of the evidence is from interviews. When an appraisal focuses more heavily on interview evidence, the need for indirect artifacts is reduced or nonexistent when the interviews supply sufficient evidence. Therefore, when a SCAMPI with People CMM is planned, the plan should address the practices that might not have indirect artifacts. Interviews will become a deciding factor for practice compliance and goal satisfaction.

The version of the interpretation guide in Section 2 does not list all potential practices that might not have indirect artifacts. However, two practices that might not have indirect artifacts are listed below.

- Performance Management—Goal 2: P7: Those responsible for managing the performance of others maintain an awareness of accomplishments against performance objectives for each of the individuals.
- Continuous Capability Improvement—Goal 2: P3: Individuals evaluate the capability of their personal work processes to identify opportunities for improvement.



## Appendix D Comparisons of People CMM-BAM Description and Interpreting SCAMPI for a People CMM Appraisal

*Table 3: Map 1 of Interpreting SCAMPI for a People CMM Appraisal to People CMM BAM Description V1.0*

<b>Interpreting SCAMPI for a People CMM Appraisal (This Document)</b>	<b>People CMM BAM Description V1.0</b>
<b>2.1.1 Analyze Requirements</b>	
<b>2.1.1.1 Determine Appraisal Objectives</b>	<b>2.2.1.1 P1 Secure Improvement Sponsor</b>
<b>2.1.1.2 Determine Appraisal Constraints</b>	<b>2.2.1.2 P2 Determine Assessment Scope</b>
<b>2.1.1.3 Determine Appraisal Scope</b>	<b>2.2.1.2 P2 Determine Assessment Scope</b>
<b>2.1.1.4 Determine Outputs</b>	<b>2.2.1.3 P3 Obtain Organization Commitment</b>
<b>2.1.1.5 Obtain Commitment to Appraisal Input</b>	<b>2.2.1.1 P1 Secure Improvement Sponsor</b>
<b>2.1.2 Develop Appraisal Plan</b>	
<b>2.1.2.1 Tailor Method</b>	<b>2.2.1.5 P5 Plan Assessment Details</b>
<b>2.1.2.2 Identify Needed Resources</b>	<b>2.2.1.5 P5 Plan Assessment Details</b>
<b>2.1.2.3 Determine Cost and Schedule</b>	<b>2.2.1.5 P5 Plan Assessment Details</b>
<b>2.1.2.4 Plan and Manage Logistics</b>	<b>2.2.1.4 P4 Arrange Assessment Logistics</b>
<b>2.1.2.5 Document and Manage Risks</b>	<b>2.2.1.5 P5 Plan Assessment Details</b>
<b>2.1.2.6 Obtain Commitment to Appraisal Plan</b>	<b>2.2.1.3 P3 Obtain Organization Commitment</b>
<b>2.1.3 Select and Prepare Team</b>	
<b>2.1.3.1 Identify Team Leader</b>	<b>2.2.3.1 A1 Organize Assessment Team</b>
<b>2.1.3.2 Select Team Members</b>	<b>2.2.3.1 A1 Organize Assessment Team</b>
<b>2.1.3.3 Prepare Team</b>	<b>2.2.1.6 P6 Train Assessment Team</b>
<b>2.1.4 Obtain and Analyze Initial Objective Evidence</b>	

<b>Interpreting SCAMPI for a People CMM Appraisal (This Document)</b>	<b>People CMM BAM Description V1.0</b>
<b>2.1.4.2</b> Prepare Participants	<b>2.2.3.2 A2</b> Brief Assessment Participants
<b>2.1.4.3</b> Administer Instruments	<b>2.2.2.3 S3</b> Administer and Score People CMM Surveys
<b>2.1.4.4</b> Obtain Initial Objective Evidence	<b>2.2.1.4 P4</b> Arrange Assessment Logistics
<b>2.1.4.5</b> Inventory Objective Evidence	<b>2.2.3.4 A4</b> Review Documents
<b>2.1.5</b> Prepare for Collection of Objective Evidence	
<b>2.1.5.1</b> Perform Readiness Review	<b>2.2.3.4 A4</b> Review Documents
<b>2.1.5.2</b> Prepare Data Collection Plan	<b>2.2.1.5 P5</b> Plan Assessment Details <b>2.2.3.5 A5</b> Script Interviews
<b>2.2.1</b> Examine Objective Evidence	
<b>2.2.1.1</b> Examine Objective Evidence from Instruments	<b>2.2.2.4 S4</b> Analyze People CMM Survey Results
<b>2.2.1.2</b> Examine Objective Evidence from Presentations	<b>2.2.3.4 A4</b> Review Documents
<b>2.2.1.3</b> Examine Objective Evidence from Documents	<b>2.2.3.4 A4</b> Review Documents
<b>2.2.1.4</b> Examine Objective Evidence from Interviews	<b>2.2.3.6 A6</b> Interview Process Owners <b>2.2.3.9 A9</b> Interview Managers <b>2.2.3.11 A11</b> Conduct Workforce Discussions
<b>2.2.2</b> Verify and Validate Objective Evidence	
<b>2.2.2.1</b> Verify Objective Evidence	<b>2.2.3.7 A7</b> Consolidate Process Owner Data <b>2.2.3.8 A8</b> Perform Follow-up Interviews <b>2.2.3.10 A10</b> Consolidate Manager Data <b>2.2.3.12 A12</b> Consolidate Workforce Data
<b>2.2.2.2</b> Characterize Implementation of Model Practices	<b>2.2.3.13 A13</b> Develop Preliminary Assessment Findings
<b>2.2.2.3</b> Validate Practice Implementation Gaps	<b>2.2.3.15 A15</b> Review Preliminary Findings with Legal <b>2.2.3.16 A16</b> Review Preliminary Findings with Process Owners <b>2.2.3.17 A17</b> Review Preliminary Findings with Workforce <b>2.2.3.18 A18</b> Review Preliminary Findings with Managers
<b>2.2.3</b> Document Objective Evidence	
<b>2.2.3.1</b> Take/Review/Tag Notes	<b>2.2.3.4 A4</b> Review Documents
<b>2.2.3.2</b> Record Presence/Absence of Objective Evidence	<b>2.2.3.14 A14</b> Prepare Preliminary Findings Briefing

<b>Interpreting SCAMPI for a People CMM Appraisal (This Document)</b>	<b>People CMM BAM Description V1.0</b>
<b>2.2.3.3</b> Document Practice Implementation Gaps	<b>2.2.3.14 A14</b> Prepare Preliminary Findings Briefing
<b>2.2.3.4</b> Review and Update the Data Collection Plan	<b>2.2.3.8 A8</b> Perform Follow-up Interviews
<b>2.2.4</b> Generate Appraisal Results	
<b>2.2.4.1</b> Derive Findings and Rate Goals	<b>2.2.3.19 A19</b> Revise Final Findings and Rate Maturity
<b>2.2.4.2a</b> Determine Process Area Capability Level	NA
<b>2.2.4.2b</b> Determine Satisfaction of Process Areas	<b>2.2.3.19 A19</b> Revise Final Findings and Rate Maturity
<b>2.2.4.3a</b> Determine Capability Profile	NA
<b>2.2.4.3b</b> Determine Maturity Level	<b>2.2.3.19 A19</b> Revise Final Findings and Rate Maturity
<b>2.2.4.4</b> Document Appraisal Results	<b>2.2.3.20 A20</b> Prepare Final Findings Briefing
<b>2.3.1</b> Deliver Appraisal Results	
<b>2.3.1.1</b> Present Final Findings	<b>2.3.3.21 A21</b> Present Final Findings
<b>2.3.1.2</b> Conduct Executive Session(s)	<b>2.2.3.22 A22</b> Debrief Sponsor
<b>2.3.1.3</b> Plan for Next Steps	<b>2.2.3.23 A23</b> Wrap-up Assessment
<b>2.3.2</b> Package and Archive Appraisal Assets	
<b>2.3.2.1</b> Collect Lessons Learned	<b>2.2.3.23 A23</b> Wrap-up Assessment
<b>2.3.2.2</b> Generate Appraisal Record	<b>2.2.4.1 R1</b> Complete Final People CMM Assessment Report
<b>2.3.2.3</b> Provide Appraisal Feedback to CMMI Steward	<b>2.2.4.2 R2</b> Report Data to People CMM Assessment Repository (PCAR)
<b>2.3.2.4</b> Archive or Dispose of Key Artifacts	<b>2.2.3.23 A23</b> Wrap-up Assessment

**Table 4: Map 2 of Interpreting SCAMPI for a People CMM Appraisal to People CMM BAM Description V1.0**

<b>Interpreting SCAMPI for a People CMM Appraisal (This Document)</b>	<b>People CMM BAM Description V1.0</b>
	<b>2.2.1 Preparing Phase</b>
2.1.1.1 Determine Appraisal Objectives 2.1.1.5 Obtain Commitment to Appraisal Input	2.2.1.1 P1 Secure Improvement Sponsor
2.1.1.2 Determine Appraisal Constraints 2.1.1.3 Determine Appraisal Scope	2.2.1.2 P2 Determine Assessment Scope
2.1.1.4 Determine Outputs 2.1.2.6 Obtain Commitment to Appraisal Plan	2.2.1.3 P3 Obtain Organizational Commitment
2.1.2.4 Plan and Manage Logistics	2.2.1.4 P4 Define Improvement Infrastructure
2.1.2.1 Tailor Method 2.1.2.2 Identify Needed Resources 2.1.2.3 Determine Cost and Schedule 2.1.2.5 Document and Manage Risks 2.1.5.2 Prepare Data Collection Plan	2.2.1.5 P1 Plan Assessment Details
2.1.3.3 Prepare Team	2.2.1.6 P6 Train Assessment Team
2.1.2.4 Plan and Manage Logistics 2.1.4.3 Obtain Initial Objective Evidence	2.2.1.7 P7 Arrange Assessment Logistics
	<b>2.2.2 Surveying Phase</b>
	2.2.2.1 S1 Select People CMM Survey Sample
	2.2.2.2 S2 Prepare Survey Logistics
2.1.4.2 Administer Instruments	2.2.2.3 S3 Administer and Score People CMM Surveys
2.2.1.1 Examine Objective Evidence from Instruments	2.2.2.4 S4 Analyze People CMM Survey Results
	<b>2.2.3 Assessing Phase</b>
2.1.3.1 Identify Team Leader 2.1.3.2 Select Team Members	2.2.3.1 A1 Organize Assessment Team
2.1.4.1 Prepare Participants	2.2.3.2 A2 Brief Assessment Participants
2.2.1.1 Examine Objective Evidence from Instruments	2.2.3.3 A3 Analyze People CMM Survey Results
2.1.4.4 Inventory Objective Evidence 2.1.5.1 Perform Readiness Review 2.2.1.2 Examine Objective Evidence from Presentations 2.2.1.3 Examine Objective Evidence from Documents 2.2.3.1 Take/Review/Tag Notes	2.2.3.4 A4 Review Documents

<b>Interpreting SCAMPI for a People CMM Appraisal (This Document)</b>	<b>People CMM BAM Description V1.0</b>
<b>2.1.5.2</b> Prepare Data Collection Plan	<b>2.2.3.5 A5</b> Script Interviews
<b>2.2.1.4</b> Examine Objective Evidence from Interviews <b>2.2.3.1</b> Take/Review/Tag Notes	<b>2.2.3.6 A6</b> Interview Process Owners
<b>2.2.2.1</b> Verify Objective Evidence	<b>2.2.3.7 A7</b> Consolidate Process Owner Data
<b>2.2.3.4</b> Review and Update the Data Collection Plan	<b>2.2.3.8 A8</b> Perform Follow-up Interviews
<b>2.2.1.4</b> Examine Objective Evidence from Interviews <b>2.2.3.1</b> Take/Review/Tag Notes	<b>2.2.3.9 A9</b> Interview Managers
<b>2.2.2.1</b> Verify Objective Evidence	<b>2.2.3.10 A10</b> Consolidate Manger Data
<b>2.2.1.4</b> Examine Objective Evidence from Interviews <b>2.2.3.1</b> Take/Review/Tag Notes	<b>2.2.3.11 A11</b> Conduct Workforce Discussions
<b>2.2.2.1</b> Verify Objective Evidence	<b>2.2.3.12 A12</b> Consolidate Workforce Data
<b>2.2.2.2</b> Characterize Implementation of Model Practices	<b>2.2.3.13 A13</b> Develop Preliminary Assessment Findings
<b>2.2.3.2</b> Record Presence/Absence of Objective Evidence <b>2.2.3.3</b> Document Practice Implementation Gaps	<b>2.2.3.14 A14</b> Prepare Preliminary Findings Briefing
<b>2.2.2.3</b> Validate Practice Implementation Gaps	<b>2.2.3.15 A15</b> Review Preliminary Findings with Legal Representative
<b>2.2.2.3</b> Validate Practice Implementation Gaps	<b>2.2.3.16 A16</b> Review Preliminary Findings with Process Owners
<b>2.2.2.3</b> Validate Practice Implementation Gaps	<b>2.2.3.17 A7</b> Review Preliminary Findings with Workforce
<b>2.2.2.3</b> Validate Practice Implementation Gaps	<b>2.2.3.18 A18</b> Review Preliminary Findings with Managers
<b>2.2.4.1</b> Derive Findings and Rate Goals <b>2.2.4.2b</b> Determine Satisfaction of Process Areas <b>2.2.4.3b</b> Determine Maturity Level	<b>2.2.3.19 A19</b> Revise Final Findings and Rate Maturity
<b>2.2.4.4</b> Document Appraisal Results	<b>2.2.3.20 A20</b> Prepare Final Findings Briefing
<b>2.3.1.1</b> Present Final Findings	<b>2.2.3.21 A21</b> Present Final Findings
<b>2.3.1.2</b> Conduct Executive Session(s)	<b>2.2.3.22 A22</b> Debrief Sponsor
<b>2.3.1.3</b> Plan for Next Steps <b>2.3.2.1</b> Collect Lessons Learned <b>2.3.2.4</b> Archive and/or Dispose of Key Artifacts	<b>2.2.3.23 A23</b> Wrap-up Assessment
	<b>2.2.4</b> Reporting Phase

<b>Interpreting SCAMPI for a People CMM Appraisal (This Document)</b>	<b>People CMM BAM Description V1.0</b>
<b>2.3.2.2</b> Generate Appraisal Record	<b>2.2.4.1 R1</b> Complete Final People CMM Assessment Report
<b>2.3.2.3</b> Provide Appraisal Feedback to CMMI Steward	<b>2.2.4.2 R2</b> Report Data to People CMM Assessment Repository (PCAR)

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## Appendix E Organizational Structures

As defined in People CMM, “unit,” has recursive meanings. A unit is a single, well-defined organizational component (e.g., a department, section, or project) of an organization. The term “unit” is used to refer to any organizational entity that is accountable to a specified individual(s) (usually a manager) responsible for accomplishing a set of performance objectives that can be met only through collective action. A workgroup may constitute the lowest-level unit, but the lowest-level units often consist of several workgroups. “Unit” is a recursive concept; units may be composed from other units cascading down the organization. For instance, a division may be a unit consisting of departments, each of which may be a unit consisting of programs, each of which may be a unit consisting of projects, and so on.

To be consistent with the SCAMPI, project units are selected as entities for an appraisal. The projects are randomly selected and demographically represent the organization in order for the appraisal to be considered valid. There must be sufficient representation when selecting projects for the appraisal. Appendix A explains how to make a sufficient and representative selection.

“Workgroup” is used the same way as in People CMM. A workgroup might or might not be a “project.” The term “organization” can also be recursive. An organization is defined as a unit within a company or other entity (e.g., government agency or branch of service) within which many projects are managed as a whole. All projects within an organization share a common top-level manager and common policies.

Any term that clusters projects/units might be the appraised organization, but the scope is limited to the definition of organization in the appraisal plan. An appraised organization might have multiple sub-levels that all act above the project/unit level. For the purposes of the appraisal these would be “organization” entities, and when practices are determined to be organizational in focus, the appraisal team must determine which level of “organization” should be interviewed and supply artifacts for each related practice.

The practices within the People CMM should be mapped by the appraisal team using the generic PII's to allocate each practice to project/unit or organization, including the level of the organization.



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## **Appendix F   Appraisal Disclosure Statement (ADS)**

The appraisal disclosure statement (ADS) provides information essential for the adequate interpretation of the maturity level or capability level ratings resulting from a People CMM Class A appraisal.

The ADS is prepared by the appraisal team leader and provided to the appraisal sponsor at the conclusion of the appraisal. If the final findings briefing reports the appraisal ratings, the vehicle for reporting the ratings must be the ADS. Otherwise the appraisal team leader delivers the ADS to the sponsor as a separate document.

The ADS consists of the following information:

- identification of appraisal sponsor and sponsor's organizational affiliation
- identification of appraisal team leader and appraisal team members and their organizational affiliations
- identification of organizational unit appraised (i.e., the unit to which the ratings are applicable and the domains examined, as defined in the appraisal plan)
- identification of reference model(s) (version, representation, and domains)
- identification of appraisal method (name and version)
- itemization of process areas rated and process areas not rated
- maturity level and/or capability level ratings assigned
- dates of on-site activity
- date of issuance of ADS
- statement affirming that all SCAMPI requirements were met
- signature of appraisal team leader (at a minimum); signatures of appraisal team members and appraisal sponsor (optional)



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## **Appendix G   The Role of Practice Implementation Indicators**

This appendix provides a conceptual overview of the process used to verify practice implementation and the role of practice implementation indicators. Verifying the implementation of processes relative to models of best practices is essential.

### **Verifying Practice Implementation**

Verifying that People CMM practices are implemented requires a review based on objective evidence. This would include such things as verifying that a unit-specific practice is implemented within a unit or an organization-specific practice is implemented within an organization.

Having a well-defined approach for verifying practice implementation is critically important for several reasons. For the process improvement sponsor, it provides some assurance that the resources applied to the improvement effort will result in the desired outcome and benefits. For process improvement agents or champions, it enables them to know when they have succeeded with the implementation activity and to informally monitor whether the practice continues to be implemented over time.

For appraisal teams, it allows them to determine what capability level or maturity level ratings are warranted. People CMM process area goal satisfaction is predicated on implementation of the relevant specific or institutionalization practices or acceptable alternatives. Hence verification of practice implementation is a crucial appraisal task. (See Section 4.6 of the People CMM: Required, Expected, and Informative Components.)

### **Practice Implementation Indicators**

The use of practice implementation indicators (PIIs) is simple and applicable to any practice or activity. It is based on the idea that the conduct of an activity or the implementation of a practice will result in “footprints”—evidence that the activity was conducted or the practice was implemented. For example, if one balances a checkbook at the end of the month, there are several potential ways to confirm that this activity has taken place. First, the person who balanced it can affirm that this activity was conducted. Second, there will likely be an entry in the checkbook register for each check or transaction to indicate that it matches with a corresponding entry on the bank statement.

PIIs refer to the footprints that are the necessary and unavoidable consequence of practice implementation. They include information contained in artifacts and information gathered from interviews with managers and practitioners and with the People CMM survey, if used.

### **The Role of PIIs**

ARC-compliant appraisal methods employ objective evidence obtained from one or more sources (e.g., instruments, documents, and/or interviews). An appraisal team bases its decisions about practice implementation on examination of this objective evidence.

Once an organization has an understanding of how its processes relate to the People CMM model, it is possible to capture PIIs that provide objective evidence of implementation. Establishing the collection of PIIs for the organization provides assurance to the process improvement sponsor that the expected implementation activities have resulted in the alignment of the organization's activities with the People CMM.

This aggregation of objective evidence—the PIIs—is an important organizational process asset with a number of potential uses, most notably providing the appraisal team with a head start in understanding the organization's implementation of the People CMM. This allows the appraisal team to verify that the objective evidence provided is adequate for substantiation of practice implementation rather than having to perform the more difficult, error-prone, and time-consuming task of investigating each practice to find the objective evidence needed to substantiate implementation.

The appraised organization and the appraisal team have a clearer picture of what artifacts need to be provided to substantiate implementation of the practices, minimizing the number of further interviews and documentation requests required. The extent to which the appraised organization can provide this information helps determine how much further investigation is required.

This approach also provides a significantly more reliable and accurate appraisal. The PII-based approach is not meant to turn the appraisal into a documentation review exercise. It merely allows for a more focused, effective, and possibly shorter on-site phase.

Finally, the PIIs are not intended to tie the hands of model implementers or process appraisal teams. The primary value of the PIIs lies in making explicit what has been subject to wide variations in interpretation and understanding. Over time, sharing PIIs will result in a set of practice implementation scenarios (e.g., for small, medium, and large organizations or units) and a standard set of PIIs that could be used as a starting point for further customization. The particular process implementation context and the unit specifics would determine which indicators make sense for that implementation. Appraisal teams would be able to find out if the agreed-upon indicators exist while still having the freedom to make judgments based on the facts and circumstances of the implementation.

A standard set of PIIIs could establish the norms within which most implementations would fall, allowing implementation and appraisal efficiencies to be realized while at the same time recognizing that alternative implementations using alternative practices might be possible.

## **PII Components**

PIIs have two components or dimensions: an objective evidence component and a practice implementation component. The objective evidence component is the **form** of the objective evidence. The practice implementation is the **significance** of the objective evidence in relation to the practice implementation.

## **Forms of Objective Evidence**

An appraisal team bases its practice implementation decisions on the objective evidence available, which can take on one or both of the following forms:

- artifacts
  - work products, which are the explicit intended consequences of practice implementation
  - artifacts that are incidental to, but indicative of, practice implementation
- affirmations
  - written or oral statements from practitioners who carry out the activities relevant to the practice or from other stakeholders in the practice
  - demonstrations or presentations (e.g., the demonstration of the capability of a tool or other mechanism as it relates to the implementation of a practice or a presentation explaining some aspect of the organization or project)

Note that there is not a strong distinction in the model between artifacts and work products. In the context of PIIIs, “work product” refers to an artifact that is either explicitly mentioned in the statement of a People CMM practice or whose absence would be a strong indicator of incomplete or inadequate practice implementation. The weaker term “artifact” is used in the context of PIIIs to refer to an artifact whose existence is incidental to the accomplishment of the practice (i.e., a side-effect).

## **Types of PIIIs**

Using the above discussion as the framework, it is possible to itemize the types of PIIIs that might be present as a consequence of practice implementation. Table 5 shows PII types, which collectively provide coverage for any People CMM practice. Each type is described in more detail in the pages that follow.

Table 5: PII Types

PII Type	Objective Evidence Form	Generic Description
Direct	Artifact (work product)	Work product(s) that reflect (document the information content of) the establishment of {insert text from practice statement that describes object of practice enactment}.
Indirect	Artifact	Artifact(s) that are an indirect consequence (or side-effect) of the effort required to {insert text from practice statement that describes object of practice enactment}.
Direct	Affirmation	Affirmations from individuals who participated in or contributed to {insert text from practice statement that describes object of practice enactment} OR affirmations from individuals who are users of (or who can substantiate use of) {insert text from practice statement that describes object of practice enactment}.

**Direct Artifact**—This PII type is relevant when the establishment of a work product is an integral part of practice implementation. Sometimes this is explicit, as in Competency Analysis Practice 7 which says, “Competency information regarding the capabilities of individuals in their workforce competencies is collected and maintained according to a documented procedure.” In other instances it is not explicit, although it would be difficult to imagine practice implementation without the presence of one or more work products. In most cases, the model document already identifies these work products.

**Indirect Artifact**—This PII type applies to artifacts that are produced as a natural consequence of the enactment of a practice. In contrast to a direct artifact PII, this type of artifact is an indirect consequence or side-effect of practice enactment. Indirect artifacts that are relevant to this PII will vary widely and will tend to be implementation specific. This indicator type is especially useful if there are doubts about whether the intent of the practice has been met (e.g., a work product exists but there is no indication of where it came from or who developed it).

**Direct Affirmation**—This PII type refers to information obtained through interviews of the individuals who are involved in or stakeholders of the enactment of a practice. This type can also apply to information provided in other ways, such as through demonstrations or presentations.

## PII Descriptions

A PII description (PIID) is a structure or schema defined to provide a repository for the PII information. Table 6 shows an example of such a structure. Note that this is a notional description of the content, not a physical definition of the format.

*Table 6: A PIID Schema for People CMM*

Attribute	Synopsis	Remarks
Practice ID	This identifies the process area, goal, and practice that the PII is associated with.	Acronyms found in the People CMM model are used.
PII ID	This identifies the indicator type and the form of objective evidence	Types are direct artifact, indirect artifact, and direct affirmation.
Description	This is a description of the PII as applied to this practice.	
Examples	These are examples of artifacts or affirmations that would exemplify the intent of the PII and/or exploratory questions (EQs) or "look fors" (LFs). They assist appraisers in identifying relevant artifacts or eliciting relevant information.	Aim to minimize any overlap with such information that is already in the model document.
Organizational Implementation	This attribute would be filled in by the organization as part of its implementation program and provided to the appraisal team as a resource.	

Table 7 shows an example PIID for specific practice 1.1-1 of the People CMM staffing process area.

*Table 7: An Example PIID for People CMM*

Attribute	Value
Practice ID	STF P1
PII ID	Direct Artifact
Description	Plans that reflect and coordinate the staffing activities in a project (unit) in accordance with documented organization policies and procedures
Examples	Project staffing plan
Organizational Implementation	Staffing plans at the organization level. Policies and procedures at the organizational level for all projects.

These descriptions have a number of uses beyond process appraisals. For example, they can be used during the model implementation phase, after model implementation as a training vehicle for new personnel, or for internal monitoring of practice implementation.

### **Application of PIIs in Model Implementation**

Indicator use benefits organizations committed to model-based process improvement. Typically, organizations will either implement model practices directly or will ensure that the practices used in the organization help to achieve goals (through the mechanism of alternative practices).

Since models have to be expressed and published in an implementation-independent manner, the model implementation requires an understanding of how the model intent (as expressed through goals, practices, and other model material) is to be realized in the organization. The model intent is made real through its impact on the way people work: if there is no relation between how they work and the model, the organization has not implemented the model. Thus, understanding how the implementation of the model relates to what people are doing in the organization is a necessary and unavoidable prerequisite to implementing the model. PIIDs provide a mechanism for describing the implementation of a model practice.

### **Application of PIIs in Process Appraisal**

During the course of a process appraisal, the appraisal team's primary focus is verifying practice implementation. This is accomplished by (1) obtaining objective evidence relevant to the implementation of a practice, (2) comparing the objective evidence with what is expected, and (3) making a determination of practice implementation based on the difference between actual and expected evidence.

The PIIs assist the appraisal team (as well as the implementing organization) with task 1 by providing a framework or structure that makes explicit the types of objective evidence that should be considered. In concert with the People CMM model documentation, this provides the model basis against which the organization's actual operating practices are compared.

Note that PIIs do not prescribe what objective evidence must be present for practice implementation determinations to be made. Instead, they make explicit what is reasonable for an appraisal team to consider. The particular circumstances and attributes of the organizational unit and/or project must be taken into consideration when making determinations of practice implementation. As a general rule, the more objective evidence and the more PIIs represented by that objective evidence, the higher the confidence level that the practice is implemented.

The PII structure helps the appraisal team compare the objective evidence with what is expected, to the extent that the team has agreed in advance on the objective evidence it *expects* to see for each process instantiation examined. In some cases it might be difficult or

impossible to have developed a team consensus in advance about what objective evidence must be seen. But sooner or later the appraisal team must establish a consensus view of what is reasonable since it is only that consensus that permits a determination of practice implementation.

The final practice implementation determination task is developing a team consensus about whether the practice is implemented for the process instantiation being examined. This decision is based on the difference between what is expected and what is observed.



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# Appendix H Focused Investigation Elaboration and Guidance

## Concept Description

This appendix describes the use of preliminary objective evidence review, continuous consolidation of objective evidence, and practice characterization in focusing the data collection and investigation effort of the appraisal team.

Focused investigation relies on a high degree of planning, organization, and subsequent management and control of the activities of the appraisal. The concept incorporates the following activities:

- collecting preliminary objective evidence through instruments as part of obtaining preliminary data (e.g., with the People CMM survey)
- creating an inventory of objective evidence collected to support the characterization of practice implementation
- initially reviewing and analyzing preliminary objective evidence inventoried to identify gaps in objective evidence supporting practice characterization
- identifying information needs for the support of the initial preparation and the refinement of the data collection plan
- continuously consolidating objective evidence collected and updating the status of practice characterization for each organizational unit instantiation (aggregated up to the organizational unit)

## Preliminary Focused Investigation

Focused investigation should begin during the appraisal planning phase. Investigation is best initiated with a practice-based data collection instrument that documents the organizational unit's implementation of the practices of the People CMM for each instantiation within the scope of the appraisal. Preliminary data can be collected using instruments such as questionnaires, surveys, and presentations. This data should include a preliminary inventory of practice implementation indicators.

An inventory and review of this data provides an important initial determination of the gaps in the data available to support practice implementation, and what information and objective evidence is needed. These activities are performed as part of process 2.1.4 Obtain and Analyze Initial Objective Evidence. The more complete and comprehensive this early data collection and analysis, the better prepared the organizational unit will be for the appraisal.

Preliminary information can provide the foundation for the data collection plan for the remainder of the appraisal process. It can also provide the foundation for the readiness review and any necessary adjustments in the appraisal plan, providing a clearer set of initial expectations for the magnitude of the appraisal effort. Data gaps found can result in additional document requests and other data collection plans. These activities are performed as an early part of process 2.1.5 Prepare for Collection of Objective Evidence.

### **Continuous Consolidation and Tracking**

A data collection plan is developed and followed after the initial focused investigation effort. Data collection activities are described by process 2.2.1 Examine Objective Evidence. This process typically consists of planned data collection activities that include presentations, document reviews, and interviews.

As these data collection activities are performed, practice characterization and strengths and weaknesses are recorded and continuously reviewed (see processes 2.2.2 Verify and Validate Objective Evidence and 2.2.3 Document Objective Evidence). Additional data collected is added to and consolidated with the data already collected to provide the Appraisal team with a continuous view of their progress against the data collection plan and model coverage. This is referred to as "continuous consolidation."

Monitoring and controlling the data collection plan and model coverage is essential for focused investigation and continuous consolidation. The appraisal team must be able to record, monitor, and track progress against the data collection plan. This can be done in several ways but generally requires the use of a mechanism to record progress toward determining the practice characterization for each reference model practice within the scope of the appraisal. As data is collected for each practice and each sample instantiation of the organizational unit being appraised, some mechanism should be used to make easier to implement the comparison and consolidation practice.

Perhaps the most important feature of focused investigation is the appraisal team's awareness of its status regarding the determination of practice characterization and goal satisfaction. The team continually maintains an understanding of how the data collected supports the implementation of each practice for each instantiation of the organizational unit and what additional objective evidence is needed. This allows the team to update the data collection plan to refocus their efforts optimally during the data collection activities.

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# Appendix I      Combined Appraisal Guidance

In determining appraisal constraints (See activity 2.1.1.1 Determine Appraisal Objectives), the Lead Appraiser might need to plan and coordinate for integration of the SCAMPI with People CMM with other SCAMPI appraisals (e.g., SCAMPI for CMMI), as appropriate to meet the organization's business and appraisal objectives.

A SCAMPI for People CMM appraisal can be combined with a SCAMPI for CMMI appraisal, although the considerations below should be addressed in planning and preparing for the combined appraisal.

## Selecting a Lead Appraiser

When the appraisal team leader performs a combined SCAMPI with CMMI and People CMM, all requirements for Lead Appraisers as defined by the SEI for both People CMM and CMMI must be fulfilled. Refer to the *Standard CMMI Appraisal Method for Process Improvement (SCAMPI) Version 1.1. Method Definition Document* for details [SEI 01a].

Lead appraisers who will conduct a combined SCAMPI with CMMI and People CMM appraisal must be authorized lead appraisers for both models.

## Identifying Scope

When an organization wants a combined appraisal for multiple models, this becomes the issue for the Lead Appraiser. It is then the responsibility of the Lead Appraiser to integrate the activities involved in appraising the organization against each model. It is also the responsibility of the Lead Appraiser to ensure that the organization is prepared for an integrated appraisal and that the appropriate organizational scope and participants are identified.

## Planning the Appraisal

When a combined SCAMPI with CMMI and People CMM appraisal is planned there should be one combined and common appraisal plan.

## **Team Preparation**

For a SCAMPI with People CMM, all team members must have previously completed the SEI-licensed Introduction to People CMM course delivered by an instructor who is authorized by the SEI.

When a combined SCAMPI with CMMI and People CMM is performed, ideally all team members will have completed both the SEI-licensed Introduction to CMMI course and the Introduction to People CMM course delivered by instructors who are authorized by the SEI. When a combined SCAMPI with CMMI and People CMM is performed, some appraisal team members might not be trained to participate with both models. That is, some might only be trained for CMMI and some for People CMM. In these cases, the appraisal team members who have only one model capability can sit with the team throughout the consensus but cannot participate in the consensus discussions for the models in which they are not trained and qualified.

# Appendix J Process Area Workbook (PAWB)

The process area workbook (PAWB) is a spread sheet tool for capturing evidence during an appraisal. Evidence gathered includes direct artifacts, indirect artifacts, interviews, and survey data (if surveys are used). While use of the PAWB is not a SCAMPI requirement, it is extremely useful. Figure 2 is an example worksheet for a work environment.

Goal	Practice	Project	Type	Inst Char	Weakness (Description of gap in implementation) Strengths are Optional	Information Needed	OU Char	OU Preliminary Finding (gaps in implementation)	Goal Rating	Goal Level Findings	Supporting Evidence
G1	P1	1									
	P1	2									
	P1	3									
	P1	4									
	P2	1									
	P2	2									
	P2	3									
	P2	4									
	P3	1									
	P3	2									
	P3	3									
	P3	4									
	P4	1									
	P4	2									
	P4	3									
	P4	4									
	P5	1									
	P5	2									
	P5	3									
	P5	4									
G2	P6	1									
	P6	2									
	P6	3									
	P6	4									
	P7	1									
	P7	2									
	P7	3									
	P7	4									
	P8	1									
	P8	2									
G3	P8	3									
	P8	4									
	CO1	1									
	CO1	2									
	CO1	3									
	CO1	4									
	CO2	1									
	CO2	2									
	CO2	3									
	CO2	4									
	AB1	1									
	AB1	2									
	AB1	3									
	AB1	4									
	AB2	1									
	AB2	2									
	AB2	3									
	AB2	4									
	AB3	1									
	AB3	2									
	AB3	3									
	AB3	4									
	AB4	1									
	AB4	2									
	AB4	3									
	AB4	4									
	ME1	1									
	ME1	2									
	ME1	3									
	ME1	4									
	ME2	1									
	ME2	2									
	ME2	3									
	ME2	4									
	VE1	1									
	VE1	2									
	VE1	3									
	VE1	4									
	VE2	1									
	VE2	2									
	VE2	3									
	VE2	4									

Figure 2: Work Environment Worksheet in PAWB

Figure 2 shows, by project, the type of evidence obtained for each goal and for each practice within the goal in the appraisal scope. The appraisal team must keep in mind that more than one piece of evidence is required before the instantiation characterization can be determined in column 5.

The PAWB worksheets are evolving documents used by the appraisal team to understand the degree of evidence capture and work required before the appraisal can be completed. The worksheets should be reviewed daily. Definitions and requirements for each column in the PAWB are listed below.

1. **Goal**—The goal column has a row for each specific goal and each generic goal for a process area (rows G1 through Gn, including the institutionalization goal.)
2. **Practice**—The practice column maps practices to goals, with a row for each practice associated with the goal.
3. **Project**—For each practice, the column has a row for each project included in the appraisal for the appraised organization. If more than four projects are included, insert a row for each additional project by placing the cursor in the project four cell, right clicking your mouse, and selecting “insert” and then “entire row.”

*Table 8: Indicator Types*

Indicator Type	Description	Examples
<b>Direct artifacts</b>	The tangible outputs resulting directly from implementation of a practice. An integral part of verifying practice implementation. Might be explicitly stated or implied by the practice statement or associated informative material.	Documents, deliverable work products, training materials, plans, etc. Work products are sometimes stated in the informative materials in the People CMM
<b>Indirect artifacts</b>	Artifacts that are a consequence of performing a practice or that substantiate its implementation, but which are not the purpose for which the practice is performed. This indicator type is especially useful when there might be doubts about whether the intent of the practice has been met (e.g., an artifact exists but there is no indication of where it came from, who worked to develop it, or how it is used.	Meeting minutes, review results, status reports  Performance measures  Work products are sometimes stated in the informative materials in the People CMM.
<b>Affirmations</b>	Oral or written statements confirming or supporting implementation of a practice. These are usually provided by the implementer of the practice and/or internal or external customers, but might also include other stakeholders (e.g., managers, suppliers).	Interviews  Presentations  Questionnaire responses

4. **Type**—Mini-teams use this column to specify the type of objective evidence found as practice implementation is characterized at the instantiation (project) level. Possible types include the following: “A” for direct artifacts, “B” for indirect artifacts, and “C” for affirmations. For type C, face-to-face (F2F) should also be recorded if the objective evidence was collected from discussion with practitioners so the appraisal requirement for type C coverage rule can be tracked.
5. **Instantiation Characterization**—Mini-teams use this column to characterize the degree of practice implementation at the instantiation (project) level. Practice implementation is characterized as fully implemented (FI), largely implemented (LI), partially implemented (PI), or not implemented (NI).

*Table 9: Rules for Characterizing Instantiation-Level Implementations of Practices*

Label	Meaning
Fully Implement (FI)	<ul style="list-style-type: none"> <li>• The direct artifact is present and judged to be appropriate.</li> <li>• At least one indirect artifact and/or affirmation exists to confirm the implementation.</li> <li>• No substantial weaknesses were noted.</li> </ul>
Largely Implemented (LI)	<ul style="list-style-type: none"> <li>• The direct artifact is present and judged to be appropriate.</li> <li>• At least one direct artifact and/or affirmation exists confirm the implementation.</li> <li>• One or more weaknesses were noted.</li> </ul>
Partially Implemented (PI)	<ul style="list-style-type: none"> <li>• The direct artifact is absent or judged to be inadequate.</li> <li>• Artifacts or affirmations suggest that some aspects of the practice are implemented.</li> <li>• Weaknesses have been documented.</li> </ul>
Not Implemented (NI)	Any situation not covered above.

6. **Weakness**—Mini-teams use this column to document gaps in the practice implementation at the instantiation (project) level. Weaknesses must be recorded for LI and PI characterizations.
7. **Information Needed**—Mini-teams use this field to record any additional information needed from the organization in order to finalize the instantiation characterization.
8. **Organizational/Unit (OU) Characterization**—The full appraisal team uses this field to record the practice implementation aggregation. The same labels described above are used, but the characterization is determined for the organizational level.

*Table 10: Rules for Aggregating Instantiation-Level Characterizations to Derive Appraised Organization-Level Characterizations*

Condition	Outcome	Remarks
All X (e.g., all LI)	X	All instantiations have the same characterization.
All LI or FI	LI	All instantiations are characterized LI or higher.
Any PI, No NI	LI or PI	Team judgment is applied to choose LI or PI for the organizational unit.
Any NI	NI, PI, or LI	Team judgment is applied to choose LI or PI for the organizational unit.

9. **OU Preliminary Finding**—The full appraisal team uses this column to document gaps found with the practice implementation at the organizational level. Weaknesses must be recorded for LI, PI, and NI characterizations.
10. **Goal Rating**—The full appraisal team uses this column to rate goal satisfaction based upon the extent of practice implementation. The goal is rated satisfied if
  - all associated practices are characterized at the organizational unit level as either LI or FI
  - the aggregation of weaknesses associated with the goal does not have a significant negative impact on goal achievement
11. **Goal-Level Findings**—The full appraisal team uses this column to document goal-level statements that summarize the gaps in practice implementation (strengths are optional). Normally, these statements must be abstracted to the level of the organization.
12. **Supporting Evidence**—The full appraisal team uses this column to summarize the evidence that supports the goal-level findings.

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## Appendix K Use of People CMM Survey

A survey instrument was required for all People CMM assessments as described in the People CMM BAM. Rules for selecting the number of participants and ensuring demographic coverage for the surveys are defined in the *People CMM-Based Assessment Method Description* [Hefley 98]. Even prior to SCAMPI, there were indications that the survey was not an efficient or effective approach to understanding areas of concerns for higher maturity organizations using the People CMM.

The pilot SCAMPI with People CMM with the TCS enterprise appraisal was granted a waiver on the use of the survey. CMMI SCAMPI does not require a survey; however, instruments such as surveys or questionnaires may be used as identified in the data collection plan [SEI 01a]. The SEI recommends that the People CMM appraisal survey be considered for use in low maturity level organizations when performing a SCAMPI with People CMM appraisal.



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## Appendix L Terminology

There are some key terminology differences between the CMMI and People CMM model that should be kept in mind when applying SCAMPI to both.

In CMMI:

1. Results from projects determine the level of implementation of the practices.
2. PLs are interviewed representing selected projects.
3. FARs are also interviewed from the projects.
4. All selected projects are aggregated into the organization report.

In People CMM:

1. The equivalent to “projects” results from the organization, and selected units determine the level of implementation of practices
2. Organizational artifacts might propagate to units as direct or indirect artifact evidence.
3. Affirmations from the organization representatives are taken in addition to unit (project) representatives.
4. Affirmations from PLs and ICs (~FARs) are taken.
5. The organization and PL/ICs are aggregated into the organization report.

The People CMM-Based Assessment Method V1.0 uses the term “assessment” for the method to evaluate the maturity of an organization when using the People CMM as a reference. In the interpretation guide in Section 2, the term “appraisal” is used to address the People CMM “assessment” as consistent with CMMI SCAMPI. Lead Assessor becomes Lead Appraiser.

Where CMMI SCAMPI uses “appraised organization,” SCAMPI with People CMM uses “organization.” Where CMMI SCAMPI uses “projects,” SCAMPI with People CMM uses “workgroups” and “units.” “Middle managers” are all managers above the unit leader and below the senior manager. “Engineers” in CMMI SCAMPI are “managers and individuals” in SCAMPI with People CMM. “Practitioner(s)” in CMMI become “manager(s)” or “individual(s)” or “individual contributors” in People CMM. “Functional area representatives (FARs),” who are the non-managers in CMMI SCAMPI, become “individuals” in People CMM SCAMPI, which includes the process owners.

“Unit” in People CMM is a recursive definition for any organizational entity starting with “workgroup.” It can mean any substructure within an organization (e.g., project, division,

sector). "Unit" is typically the lowest level in the organization where maturity level 2 workforce activities (such as staffing and performance management) happen.

## Appendix M Mixed Goals

Mixed goals are those which have practices at both the unit level and the organizational level. An example in People CMM would be empowered work groups (EWG) goal 3:

**P8:** Responsibility and authority for performing selected workforce activities is delegated to empowered workgroups.

**P9:** Empowered workgroups tailor workforce activities delegated to them and plan for their adoption.

**P10:** Empowered workgroups perform the workforce activities delegated to them.

**P11:** Empowered workgroups participate in managing their performance.

P8 can only be performed by an entity above the workgroup (unit) and would thus be at an "organization" level. P9, P10, and P11 all can be performed by the workgroup (unit).

Mixed goals become important when the appraisal team needs to demonstrate sufficient coverage and evidence across the organization for artifacts and interviews. The appropriate level in the organization must provide the artifacts and participate in the interviews for the appraisal team to get an understanding of compliance or the lack of compliance with the practice.

Mixed goals become especially important when the 50% rule is being reviewed. Because the 50% rule was written for units in SCAMPI, it needs to be reinterpreted when goals are mixed. In the example of goal 3 for EWG, the interview evidence can come from units for P9, P10, and P11, but for P8 can only come from an organizational entity.

For example, where there are 4 units in the appraisal, the matrix must include the organization as an entity along with the 4 units, as in Table 11.

*Table 11: Mixed Goals Matrix*

EWG GOAL 3	Organization Entity	Unit 1	Unit 2	Unit 3	Unit 3	$\Sigma$ Row
P8						
P9						
P10						
P11						
$\Sigma$ Column						

Because only the organization entity can provide interview evidence for P8, it becomes especially critical that the appraisal team understand this and address it in plans and scripts. Furthermore, if the interview evidence is not provided by the organizational entity, the goal cannot be satisfied, as the  $\Sigma$  row cannot be satisfied. This rightly places increased emphasis on ensuring that interviews are structured to incorporate this understanding to ask the question for P8, in this example. Each institutionalization goal in each PA is mixed in People CMM.

Other goals which are mixed include the following:

- STF G1 (O=6; U=7 and 8)
- STF G2 (O=7 and 9; U=6 and 8)
- STF G4 (O=1; U=2, 4, and 5)
- PM G4 (O=14; U=13)
- WFP G3 (O=11; U=6 and 7)
- WGD G2 (O=4; U=7, 8, 10, 11, and 12)
- CI G3 (O= 5, 8, and 9; U=7)
- EWG G1 (O=3, 4, and 5; U=1 and 2)
- MTR G1 (O=10; U=1, 2, 3, and 4)
- OPA G1 (O=3; U=1 and 2)

During the appraisal it must be determined if any goal is designed to cover both organizational support for and lower organizational level (unit or individual) implementation of a set of workforce practices. If so, the appraisal team must obtain information from the appropriate level in the appraised organization. These goals might thus become mixed in the appraised organization if the organization chose to implement the practices at multiple organizational levels. An example is STF G2, which could be implemented at an organization or unit level. Another example is CI G1: P1 is organization level, P2, 3, 12 practices are dependent on implementation.

Practices can be covered at multiple levels depending on how the organization is structured. For example, PC G3, CI G1, CBA G1, CBA G3, and QPM G1.

Mixed goals also occur in CMMI. For example,

- OEI SG1 (O=SP1.1-1, ; U=SP1-2, SP1-3)
- each institutionalization goal in each PA
  - generic practices at the organization level are GP 2.1, 3.1, and 3.2
  - generic practices at the project level are GP 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, and 2.10

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# Glossary

This glossary merges terms from several different sources. Original sources are noted after the definitions.

**accurate  
observation**

An observation extracted from data collected during an appraisal that has been determined by the appraisal team to be (a) worded appropriately, (b) based on information seen or heard, (c) relevant to the appraisal reference model being used, (d) significant such that it can be classified as a strength, weakness, or alternative practice, and (e) not redundant with other observations.

(from ARC V1.1 [SEI 01b])

**affirmation**

An oral or written statement confirming or supporting implementation of a People CMM model specific practice or generic practice. Affirmations are usually provided by the implementers of the practice and/or internal or external customers, but might also include other stakeholders (e.g., managers, suppliers).

(derived from MDD method overview [SEI 01a])

Interview responses are examples of face-to-face affirmations. Alternative forms of affirmations could include presentations or demonstrations of a tool or mechanism as it relates to implementation of a People CMM model practice.

(derived from MDD PII Appendix B [SEI 01a])

**alternative practice**

A practice that is a substitute for one or more generic or specific practices contained in the People CMM model that achieves an equivalent effect toward satisfying the goal associated with the practices. Alternative practices are not necessarily one-for-one replacements for the generic or specific practices.

(from ARC V1.1 [SEI 01b], CMMI model glossary [SEI 02], and the People CMM BAM Description [Hefley 98])

**appraisal**

An examination of one or more processes by a trained team of professionals using an appraisal reference model as the basis for determining, as a minimum, strengths and weaknesses.

(from ARC V1.1 [SEI 01b])

An appraisal that an organization does to and for itself for the purposes of process improvement.

(from ARC V1.1 [SEI 01b])

**appraisal constraints**

Constraints that affect assessment conduct, such as budget limitations, schedule limitations, and resource limitations (people and facilities).

(from People CMM BAM Description [Hefley 98])

**appraisal disclosure statement (ADS)**

A summary statement describing the ratings generated as outputs of the appraisal, and the conditions and constraints under which the appraisal was performed. The ADS should be used for public disclosures of maturity level or capability level ratings so they can be interpreted accurately.

(from this document)

**appraisal findings**

The results of an appraisal that identify the most important issues, problems, or opportunities for process improvement within the appraisal scope. Appraisal findings are inferences drawn from valid observations.

(from CMMI model glossary [SEI 02] and ARC V1.1 [SEI 01b])

**appraisal input**

The collection of appraisal information required before data collection can commence.

(from ISO 98C [ISO 98] and ARC V1.1 [SEI 01b])

**appraisal method class**

A family of appraisal methods that satisfy a defined subset of requirements in the Appraisal Requirements for People CMM (ARC). These classes are defined so as to align with typical usage modes of appraisal methods.

(derived from ARC V1.0 [SEI 00], CMMI model glossary [SEI 02], and ARC V1.1 [SEI 01b])

**appraisal modes of usage**

The contexts in which an appraisal method might be utilized. Appraisal modes of usage identified for the SCAMPI method include internal process improvement, supplier selection, and process monitoring. Appraisal modes of usage identified for the SCAMPI with People CMM method are limited to internal process improvement.

<b>appraisal objectives</b>	The desired outcome(s) of an appraisal process. (from ARC V1.1 [SEI 01b])
<b>appraisal output</b>	All of the tangible results from an appraisal. (See "appraisal record.") (from ISO 98C [ISO 98] and ARC V1.1 [SEI 01b])
<b>appraisal participants</b>	Members of the organizational unit who participate in providing information during the appraisal. (from CMMI model glossary [SEI 02] and ARC V1.1 [SEI 01b])
<b>appraisal rating</b>	The value assigned by an appraisal team to either (a) a People CMM goal or process area, (b) the capability level of a process area, or (c) the maturity level of an organizational unit. The rating is determined by enacting the defined rating process for the appraisal method being employed. (from CMMI model glossary [SEI 02] and ARC V1.1 [SEI 01b])
<b>appraisal record</b>	An orderly, documented collection of information that is pertinent to the appraisal and adds to the understanding and verification of the appraisal findings and ratings generated. (derived from ISO 98C [ISO 98] and ARC V1.1 [SEI 01b])
<b>appraisal reference model</b>	The People CMM model to which an appraisal team correlates implemented process activities. (from CMMI model glossary [SEI 02] and ARC V1.1 [SEI 01b])
<b>appraisal requirements</b>	Appraisal constraints and goals. (from People CMM BAM Description [Hefley 98])
<b>appraisal scope</b>	The definition of the boundaries of the appraisal encompassing the organizational limits and the People CMM model limits within which the processes to be investigated operate. (derived from CMMI model glossary [SEI 02], ISO 98C [ISO 98], and ARC V1.1 [SEI 01b])
<b>appraisal sponsor</b>	The individual, internal or external to the organization being appraised, who requires the appraisal to be performed and provides financial or other resources to carry it out. (derived from ISO 98C [ISO 98] and ARC V1.1 [SEI 01b])

<b>appraisal tailoring</b>	<p>Selection of options within the appraisal method for use in a specific instance. The intent of tailoring is to assist an organization in aligning application of the method with its business needs and objectives.</p> <p>(from CMMI model glossary [SEI 02] and ARC V1.1 [SEI 01b])</p>
<b>appraisal team leader</b>	<p>The person who leads the activities of an appraisal and has satisfied the qualification criteria for experience, knowledge, and skills defined by the appraisal method.</p> <p>(from ARC V1.1 [SEI 01b])</p>
<b>appraised entity</b>	<p>The organizational units to which appraisal outputs apply. An appraised entity might be any portion of an organization including an entire company, a selected business unit, a specific geographic site, units supporting a particular product line, units involved in a particular type of service, an individual project, or a multi-company team.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>artifact</b>	<p>A tangible form of objective evidence indicative of work being performed that is a direct or indirect result of implementing a People CMM model practice. (See "direct artifact" and "indirect artifact.")</p>
<b>coach</b>	<p>An authorized lead appraiser who shares the responsibilities of the appraisal team leader with another qualified person. It must be made clear to the appraisal team members and to the sponsor which responsibilities are being shared and by whom. An authorized lead appraiser has the ultimate responsibility for the appraisal activities and the results, whether acting in the role of appraisal team leader or coach.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>confidentiality</b>	<p>An agreement by which data will not be attributed to a particular individual, unit, or organization, or be disclosed without prior agreement or authorization.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>consensus</b>	<p>A method of decision making that allows team members to develop a common basis of understanding and develop general agreement concerning a decision that all team members are willing to support.</p> <p>(from ARC V1.1 [SEI 01b])</p>

<b>consistency</b>	<p>The degree of uniformity, standardization, and freedom from contradiction among documents or system components.</p> <p>Consistency of an appraisal method refers to the ability of different appraisal teams using the same method to conduct appraisals of the same scope to produce non-conflicting results.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>consolidation</b>	<p>The activity of collecting and summarizing the information provided into a manageable set of data to (a) determine the extent to which the data are corroborated and cover the areas being investigated, (b) determine the data's sufficiency for making judgments, and (c) revise the data-gathering plan as necessary to achieve this sufficiency.</p> <p>(from ARC V1.1 [SEI 01b])</p>
<b>corroboration</b>	<p>The extent to which enough data has been gathered to confirm that an observation is acceptable for use by an appraisal team.</p> <p>(from ARC V1.1 [SEI 01b])</p> <p>In SCAMPI, corroboration is obtained through method requirements for the collection of practice implementation indicators of multiple types. (See "practice implementation indicator.")</p>
<b>coverage</b>	<p>The extent to which objective evidence gathered addresses a model component within the scope of an appraisal.</p> <p>(from ARC V1.1 [SEI 01b])</p>
<b>coverage criteria</b>	<p>The specific criterion that must be satisfied in order for coverage to be claimed.</p> <p>(from ARC V1.1 [SEI 01b])</p>
<b>data collection session</b>	<p>An activity during which information that will later be used as the basis for observation formulation or corroboration is gathered. Data collection sessions (or activities) include the administration and/or analysis of instruments, document review, interviews, and presentations.</p> <p>(from ARC V1.1 [SEI 01b])</p>

<b>direct artifact</b>	<p>The tangible outputs resulting directly from implementation of a specific or generic practice. An integral part of verifying practice implementation. Might be explicitly stated or implied by the practice statement or associated informative material.</p> <p>(MDD method overview [SEI 01a])</p>
<b>discovery-based appraisal</b>	<p>An appraisal in which limited objective evidence is provided by the appraised organization prior to the appraisal, and the appraisal team must probe and uncover a majority of the objective evidence necessary to obtain sufficient coverage of People CMM model practices. Discovery-based appraisals typically involve substantially greater appraisal team effort than verification-based appraisals, in which much of the objective evidence is provided by the appraised organization. (See “verification-based appraisal” for contrast.)</p> <p>(from MDD method overview [SEI 01a])</p>
<b>document</b>	<p>A collection of data, regardless of the medium on which it is recorded, that generally has permanence and can be read by humans or machines.</p> <p>(from ARC V1.1 [SEI 01b])</p> <p>In SCAMPI, documents are work products reflecting the implementation of one or more model practices. This typically includes work products such as organizational policies, procedures, and implementation-level work products. Documents might be available in hardcopy, softcopy, or accessible via hyperlinks in a Web-based environment.</p> <p>(derived from MDD method overview [SEI 01a])</p>
<b>effective process</b>	<p>A process that can be characterized as practiced, documented, enforced, trained, measured, and able to improve.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>FI</b>	<p>(See “fully implemented.”)</p>
<b>finding</b>	<p>An observation or collection of observations that have been accepted by the team as valid. A finding includes strengths, weaknesses, evidence of alternative practices, and evidence of non-applicable practices. A set of findings should be accurate, corroborated, and consistent within itself.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>findings</b>	<p>The conclusions of an appraisal, evaluation, audit, or review that identify the most important issues, problems, or opportunities</p>

within the appraisal scope. Findings include, at a minimum, strengths and weaknesses based on valid observations.  
(from ARC V1.1 [SEI 01b])

**focused  
investigation**

A technique to prioritize appraisal team effort based on the continuous collection and consolidation of appraisal data, and monitoring of progress toward achieving sufficient coverage of People CMM model practices. Appraisal resources are targeted toward those areas for which further investigation is needed to collect additional data or verify the collected set of objective evidence.

(derived from MDD method overview [SEI 01a])

**fully implemented  
(FI)**

A practice characterization value assigned to a process instantiation when (1) direct artifacts are present and judged to be appropriate, (2) at least one indirect artifact and/or affirmation exists to confirm the implementation, and (3) no substantial weaknesses are noted.

(from MDD 3.7.2 [SEI 01a])

**indirect artifact**

An artifact that is a consequence of performing a specific or generic practice or that substantiates its implementation, but which is not the purpose for which the practice is performed. This indicator type is especially useful when there might be doubts about whether the intent of the practice has been met (e.g., a work product exists but there is no indication of where it came from, who worked to develop it, or how it is used).

(from MDD method overview [SEI 01a])

**instantiation**

For practices implementing projects, each project can demonstrate instances of consistent performance. For practices implemented organization-wide, instances of consistent performance are in evidence organizationally.

(from MDD method overview [SEI 01a])

**institutionalization**

The building of infrastructure and corporate culture that support methods, practices, and procedures so that they are the ongoing way of doing business, even after those who originally defined them are gone.

(from People CMM BAM Description [Hefley 98])

**instruments**

Artifacts used in an appraisal for the collection and presentation of data (e.g., questionnaires, organizational unit information packets).

(from ARC V1.1 [SEI 01b])

In SCAMPI, instruments are used to collect written information

	<p>relative to the organizational unit's implementation of People CMM model practices. This can include assets such as questionnaires, surveys, or an organizational mapping of People CMM model practices to its corresponding processes.</p>
<b>internal process improvement (IPI)</b>	<p>An appraisal mode of usage in which organizations appraise internal processes, generally to either baseline their process capability, to establish or update a process improvement program, or to measure progress in implementing such a program.</p> <p>(derived from MDD method overview [SEI 01a])</p>
<b>interviews</b>	<p>A meeting of appraisal team members with appraisal participants for the purpose of gathering information relative to work processes in place.</p> <p>(from ARC V1.1 [SEI 01b])</p> <p>In SCAMPI, this includes face-to-face interaction with those implementing or using the processes within the organizational unit. Interviews are typically held with various groups or individuals, such as project leaders, managers, and practitioners. A combination of formal and informal interviews might be held and interview scripts or exploratory questions developed to elicit the information needed.</p>
<b>largely implemented (LI)</b>	<p>A practice characterization value assigned to a process instantiation when (1) direct artifacts are present and judged to be appropriate, (2) at least one indirect artifact and/or affirmation exists to confirm the implementation, and (3) one or more weaknesses are noted.</p> <p>(from MDD 3.7.2 [SEI 01a])</p>
<b>lead appraiser</b>	<p>A person who has achieved recognition from an authorizing body to perform as an appraisal team leader for a particular appraisal method.</p> <p>(from ARC V1.1 [SEI 01b])</p>
<b>LI</b>	<p>(See "largely implemented.")</p>
<b>manager</b>	<p>A role that encompasses providing technical and administrative direction and control to individuals performing tasks or activities within the manager's area of responsibility. The traditional functions of a manager include planning, allocating resources, organizing, directing, and controlling work within an area of responsibility.</p> <p>(from People CMM BAM Description [Hefley 98])</p>

<b>maturity level</b>	<p>A well-defined evolutionary plateau toward achieving a mature organizational process.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>maturity questionnaires (MQ)</b>	<p>A set of questionnaires that sample the key practices in each key process area of the People CMM. The maturity questionnaire is used as a springboard to gather data across an organization and appraise the capability of an organization to execute its processes reliably.</p> <p>(from People CMM BAM Description [Hefley 98])</p> <p>In SCAMPI with People CMM, the MQ is an example of an instrument.</p> <p>(from this document)</p>
<b>middle managers</b>	<p>The site representatives who fall between the project leaders and the site manager in the organizational hierarchy.</p> <p>(from People CMM BAM Description [Curtis 01])</p>
<b>mini-team</b>	<p>(See "process area mini-team.")</p>
<b>MQ</b>	<p>(See "maturity questionnaire")</p>
<b>NA</b>	<p>(See "not applicable.")</p>
<b>NI</b>	<p>(See "not implemented.")</p>
<b>non-People CMM observation</b>	<p>An observation that is believed to have a significant impact on the organization's capability but is not related to a particular component of the People CMM.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>not applicable (NA)</b>	<p>Rating given to a People CMM component that is either not applicable or insignificant in an organization's business environment.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>not implemented (NI)</b>	<p>A practice characterization value assigned when the appraisal team determines insufficient objective evidence exists to state that the practice is implemented. That is, the criteria for assigning a value of fully implemented (FI), largely implemented (LI), or partially implemented (PI) are not satisfied.</p> <p>(from this document)</p>
<b>not rated (NR)</b>	<p>Rating given to a People CMM component that falls outside the scope of an appraisal and to People CMM components for which</p>

the appraisal team did not obtain coverage.

(from People CMM BAM Description [Hefley 98])

**NR**

(See “not rated.”)

**objective evidence**

Qualitative or quantitative information, records, or statements of fact pertaining to the characteristics of an item or service or to the existence and implementation of a process element, which is based on observation, measurement, or test and which can be verified.

(from CMMI model glossary [SEI 02], ISO 98C [ISO 98] and ARC V1.1 [SEI 01b])

In SCAMPI, sources of objective evidence include instruments, presentations, documents, and interviews.

**observation**

A written record that represents the appraisal team members’ understanding of information either seen or heard during the appraisal data collection activities. The written record might take the form of a statement or might take alternative forms as long as the information content is preserved.

(from CMMI model glossary [SEI 02] and ARC V1.1 [SEI 01b])

Information extracted from the notes of data collection sessions.

(from People CMM BAM Description [Hefley 98])

**organization**

A unit within a company or other entity (e.g., government agency or branch of service) within which many projects are managed as a whole. All projects within an organization share a common top-level manager and common policies.

(from People CMM BAM Description [Hefley 98])

**organizational scope**

That part of the appraised organization that constitutes the entity being appraised.

(adapted from People CMM BAM Description [Hefley 98])

**organizational unit**

That part of an organization that is the subject of an appraisal (also known as the organizational scope of the appraisal). An organizational unit deploys one or more processes that have a coherent process context and operates within a coherent set of business objectives. An organizational unit is typically part of a larger organization, although in a small organization, the organizational unit might be the whole organization.

(derived from CMMI model glossary [SEI 02], ISO 98C [ISO 98], and ARC V1.1 [SEI 01b])

“Organizational unit” is not the same as “unit,” which is a structural subset of the organizational unit. (See “unit.”)

<b>PA</b>	(See “process area.”)
<b>partially implemented (PI)</b>	<p>A practice characterization value assigned to a process instantiation when (1) direct artifacts are absent or judged to be inadequate, (2) artifacts or affirmations suggest that some aspects of the practice are implemented, and (3) weaknesses have been documented.</p> <p>(from MDD 3.7.2 [SEI 01a])</p>
<b>PCAR</b>	<p>Acronym for People CMM Appraisal Repository.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>People CMM scope of the appraisal</b>	<p>The portion of the People CMM used as a framework for evaluating an organization’s workforce practices during an appraisal.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>PI</b>	(See “partially implemented.”)
<b>PII</b>	(See “practice implementation indicator.”)
<b>practice characterization</b>	<p>The assignment of a value describing the extent to which a People CMM model practice is implemented, used as a mechanism to reach appraisal team consensus. The range of values for practice characterization values include fully implemented (FI), largely implemented (LI), partially implemented (PI), and not implemented (NI). Practice characterization values are assigned to each People CMM model practice for each process instantiation within the appraisal scope, and aggregated to the organizational unit level.</p> <p>(from this document)</p>
<b>practice implementation indicator (PII)</b>	<p>An objective attribute or characteristic used as a “footprint” to verify the conduct of an activity or implementation of a People CMM model specific or generic practice. Types of practice implementation indicators include direct artifacts, indirect artifacts, and affirmations.</p> <p>(derived from 15504-9 [ISO 98] and MDD method overview [SEI 01a])</p>
<b>preliminary findings</b>	<p>Initial findings created by an appraisal team after consolidating and synthesizing valid observations to provide the findings to appraisal participants for validation of accuracy.</p> <p>(derived from ARC V1.1 [SEI 01b])</p>
<b>presentations</b>	<p>In SCAMPI, a source of objective evidence that includes information prepared by the organization and delivered visually or verbally to the appraisal team to aid in understanding the organizational processes and implementation of People CMM</p>

model practices. This typically includes such mechanisms as orientation or overview briefings, and demonstrations of tools or capabilities.

(derived from MDD method overview [SEI 01a])

**process area**

A cluster of related practices that, when performed collectively, satisfy a set of goals that contribute to the capability gained by achieving a maturity level.

(from *The People Capability Maturity Model: Guidelines for Improving the Workforce* [Curtis 02])

**process area mini-team**

A subset of the appraisal team members, typically two or three, assigned primary responsibility for collection of sufficient appraisal data to ensure coverage of their assigned reference model process areas.

(from this report)

**process capability**

The range of expected results that can be achieved by following a process. (See "process performance" for contrast.)

(from People CMM BAM Description [Hefley 98])

**process capability baseline**

A documented characterization of the range of expected results that would normally be achieved by following a specific process under typical circumstances. A process capability baseline is typically established at an organizational level.

(from People CMM BAM Description [Hefley 98])

**process description**

The operational definition of the major components of a process. Documentation that specifies, in a complete, precise, verifiable manner, the requirements, design, behavior, or other characteristics of a process. It might also include the procedures for determining whether these provisions have been satisfied. Process descriptions might be found at the task, project, or organizational level.

(from People CMM BAM Description [Hefley 98])

**process development**

The act of defining and describing a process. It might include planning, architecture, design, implementation, and validation.

(from People CMM BAM Description [Hefley 98])

**process maturity**

The extent to which a specific process is explicitly defined, managed, measured, controlled, and effective. Maturity implies a potential for growth in software development capability. It indicates both the richness of an organization's software process and the consistency with which the process is applied on projects throughout the organization.

(from People CMM BAM Description [Hefley 98])

<b>process measurement</b>	<p>The set of definitions, methods, and activities used to take measurements of a process and its resulting products for the purpose of characterizing and understanding the process.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>process performance</b>	<p>A measure of the actual results achieved by following a process. (See "process capability" for contrast.)</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>process profile</b>	<p>The set of goal ratings assigned to the process areas in the scope of the appraisal. In People CMM, also known as the process area profile.</p> <p>(derived from ISO 98c [ISO 98] and ARC V1.1 [SEI 01b])</p>
<b>rating</b>	<p>(See "appraisal rating.")</p>
<b>rating components</b>	<p>Components of a CMM that can be rated. These include goals, PAs, and maturity level.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>rating scale</b>	<p>The rating scale for goals and PAs is satisfied, unsatisfied, not applicable, and not rated. The rating scale for maturity level is 1 through 5.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>relevant</b>	<p>Related to the matter at hand; pertinent. An observation must be relevant to a particular activity, set of activities, or common feature to be associated with a particular key process area.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>reliability</b>	<p>The ability to attain appraisal results that accurately characterize an organization's processes.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>repeatability</b>	<p>The ability to attain the same appraisal results if an appraisal of identical scope is conducted more than once in the same time period.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>rules of corroboration</b>	<p>Rules that define the requirements for confirming observations through the use of multiple data sources and sessions of prescribed types.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>sampling</b>	<p>A set of elements drawn from and analyzed to estimate the characteristics of a population. During an appraisal, data collection</p>

is planned to provide a sampling of the process data related to the People CMM key process areas, organizational units, and individuals and managers within the scope of the appraisal.

(from People CMM BAM Description [Hefley 98])

**satisfied**

Rating given to a goal when the aggregate of valid observations and associated findings does not negatively impact achievement of the goal. Rating given to a process area when all of its goals are rated "satisfied."

(from ARC V1.1 [SEI 01b])

**scope**

(See "appraisal scope.")

**SEI**

Acronym for Software Engineering Institute.

**senior site manager**

Senior manager, in charge of the appraised entity and usually the sponsor of the appraisal, who identifies the business goals that bear on the organization's software development and maintenance activity, identifies the scope of the appraisal and any constraints that will exist, gives the team leader the authorization to proceed, and personally participates in the opening meeting and final findings presentation.

(from People CMM BAM Description [Hefley 98])

**significant**

Having or expressing a meaning; meaningful; notable; valuable. An observation is significant if it is evidence of a strength or a weakness of a People CMM component. If an observation is not a strength or weakness, it could be significant as an acceptable alternative to the defined People CMM practice.

(from People CMM BAM Description [Hefley 98])

**site**

A geographic location of one or more of an organization's units.

(from People CMM BAM Description [Hefley 98])

**site coordinator**

A member of the appraisal team who is responsible for handling the logistics of the appraisal, including developing the schedule, notifying appraisal participants, reserving rooms, scheduling contingency interviews, and handling supplies and meals.

(from People CMM BAM Description [Hefley 98])

**site information packet**

Information to help ensure that appraisal team members are prepared to gather, interpret, and understand the information they receive during the course of an appraisal. The package assists the team members who might not be from the site in understanding the organization's culture, the language of the site's software

	<p>practitioners, and the context within which they operate.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>sponsor</b>	<p>(See “appraisal sponsor” and “senior site manager.”)</p>
<b>strength</b>	<p>Exemplary or noteworthy implementation of a People CMM model practice.</p> <p>(from CMMI model glossary [SEI 02] and ARC V1.1 [SEI 01b])</p>
<b>subpractice</b>	<p>Description of what one would expect to find implemented for the top-level key practice. The subpractices are listed beneath top level key practices in the People CMM and can be used to assist in determining whether or not the key practices are implemented satisfactorily. Subpractices are not rating components of the People CMM.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>sufficient data coverage</b>	<p>A determination that the coverage requirements have been met. (See “coverage” and “coverage criteria.”)</p> <p>(from ARC V1.1 [SEI 01b])</p>
<b>tailoring</b>	<p>(See “appraisal tailoring.”)</p>
<b>traceability</b>	<p>The degree to which a relationship can be established between two or more products of the appraisal process, especially products having a predecessor-successor relationship to one another.</p> <p>(from People CMM BAM Description [Hefley 98])</p>
<b>unit</b>	<p>A single, well-defined organizational component (e.g., a department, section, or project) of an organization. The term “unit” is used to refer to any organizational entity that is accountable to a specified individual(s) (usually a manager) responsible for accomplishing a set of performance objectives that can be met only through collective action. A workgroup may constitute the lowest-level unit, but the lowest-level units often consist of several workgroups. “Unit” is a recursive concept; units may be composed from other units cascading down the organization. For instance, a division may be a unit consisting of departments, each of which may be a unit consisting of programs, each of which may be a unit consisting of projects, and so on.</p> <p>(from <i>The People Capability Maturity Model: Guidelines for Improving the Workforce</i> [Curtis 02])</p>
<b>unsatisfied</b>	<p>Rating given to a People CMM component that is both applicable and significant in an organization’s business environment, is either</p>

not performed or is performed as defined in the People CMM with significant weaknesses, and for which no adequate alternative exists.

(from People CMM BAM Description [Hefley 98])

**valid observation**

An observation that the appraisal team members agree is (a) accurate, (b) corroborated, and (c) consistent with other valid observations.

(from ARC V1.1 [SEI 01b])

**verification-based appraisal**

An appraisal in which the focus of the appraisal team is on verifying the set of objective evidence provided by the appraised organization in advance of the appraisal in order to reduce the amount of probing and discovery of objective evidence during the appraisal on-site period. (See "discovery-based appraisal" for contrast.)

(from MDD method overview [SEI 01a])

**weakness**

The ineffective, or lack of, implementation of one or more People CMM model practices.

(from CMMI model glossary [SEI 02] and ARC V1.1 [SEI 01b])

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## References

*URLs are valid as of the publication date of this document.*

- [Curtis 01]** Curtis, Bill; Hefley, William E.; & Miller, Sally. *People Capability Maturity Model (P-CMM) Version 2.0* (CMU/SEI-2001-MM-001, ADA395316). Pittsburgh, PA: Software Engineering Institute, Carnegie Mellon University, 2001.  
<http://www.sei.cmu.edu/publications/documents/01.reports/01mm001.html>
- [Curtis 02]** Curtis, Bill; Hefley, William E.; & Miller, Sally. *The People Capability Maturity Model: Guidelines for Improving the Workforce*. Reading, MA: Addison Wesley, 2001 (ISBN 0-201-60445-0).
- [Hefley 98]** Hefley, William E. & Curtis, Bill. *People CMM-Based Assessment Method Description* (CMU/SEI-98-TR-012, ADA354685). Pittsburgh, PA: Software Engineering Institute, Carnegie Mellon University, 1998.  
<http://www.sei.cmu.edu/publications/documents/98.reports/98tr012/98tr012abstract.html>
- [Hefley 03]** Hefley, William E.; & Miller, Sally. "Software CMM or CMMI? The People CMM Supports Them Both." Software Engineering Process Group (SEPG) Conference Presentation (February 2003).
- [ISO 98]** International Organization for Standardization and International Electrotechnical Commission. *ISO/IEC TR 15504 Information Technology—Software Process Assessment*, 1998.  
<http://www.iso.ch/>
- [Radice 03]** Radice, Ron. "SCAMPI with SW-CMM," Software Engineering Process Group (SEPG) Conference Presentation (February 2003).  
<http://www.stt.com/SCAMP%20SWCMM%20SEPG%202003%20V1.pdf>
- [Radice 04]** Radice, Ron & Chandrasekaran, Natarajan. "Enterprise Appraisal Deployment of Quality Models," Software Engineering Process Group (SEPG) Conference Presentation (March 2004).

[SEI 00]

CMMI Product Development Team, ARC, *V1.0 Assessment Requirements for CMMI, Version 1.0* (CMU/SEI-2000-TR-011, ADA382587). Pittsburgh, PA: Software Engineering Institute, Carnegie Mellon University, 2000.  
<http://www.sei.cmu.edu/publications/documents/00.reports/00tr011.html>

[SEI 01a]

Members of the Assessment Method Integrated Team. *Standard CMMI Appraisal Method for Process Improvement (SCAMPI<sup>SM</sup>), Version 1.1: Method Definition Document* (CMU/SEI-2001-HB-001, ADA3399204). Pittsburgh, PA: Software Engineering Institute, Carnegie Mellon University, 2001.  
<http://www.sei.cmu.edu/publications/documents/01.reports/01hb001.html>

[SEI 01b]

CMMI Product Team. *Appraisal Requirements for CMMI<sup>SM</sup>, Version 1.1 (ARC, V1.1)* (CMU/SEI-2001-TR-034, ADA3399208). Pittsburgh, PA: Software Engineering Institute, Carnegie Mellon University, 2001.  
<http://www.sei.cmu.edu/publications/documents/01.reports/01tr034.html>.

[SEI 02]

CMMI Product Team. *CMMI<sup>SM</sup> for Systems Engineering/Software Engineering/Integrated Product and Process Development/Supplier Sourcing, Version 1.1, Continuous Representation* (CMMI-SE/SW/IPPD/SS, V1.1, Continuous) (CMU/SEI-2002-TR-011, ADA339818). Pittsburgh, PA: Software Engineering Institute, Carnegie Mellon University, 2001, 613-638.  
<http://www.sei.cmu.edu/publications/documents/02.reports/02tr011.html>

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13. ABSTRACT (MAXIMUM 200 WORDS)  Tata Consultancy Services (TCS) is a large information technology consulting, services, and business process outsourcing organization interested in reducing the costs of conducting process improvement appraisals at its multiple locations. TCS initiated a pilot to determine whether appraisals could be performed at the enterprise level instead of at each location or center while preserving the integrity of the Standard CMMI® Appraisal Method for Process Improvement V1.1 (SCAMPI <sup>SM</sup> V1.1). The pilot was also used to determine whether a single type of appraisal could be effective in an organization compliant with multiple models.  A pilot Class A SCAMPI appraisal for the People Capability Maturity Model® (People CMM®) was performed jointly with a Class A SCAMPI appraisal for Capability Maturity Model Integration (CMMI) across TCS in 2004. This report includes the draft interpretation guide used for four mini-appraisal pilots and the final enterprise-wide Class A appraisal at TCS. The information in this report could serve as an example for other organizations and is fully applicable to any size SCAMPI appraisal with People CMM.				
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